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p. 13-14: [The] fact is that midway in the Second World War, these two democratic liberal leaderships adopted Hitler's tactics of terror bombing of civilians and secretly obliterated the distinction between combatants and noncombatants in their principal organized bombing operations, thereby secretly rejecting the just war doctrine which they continue to this day, really, publicly to uphold, and to uphold in part by stigmatizing people who are more obvious about violating it. How did this come to be, and why did it come to be, and what does it tell us about where the world is today and

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ELLSBERG LECTURES

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My former colleague from the RAND Corporation, Herman Kahn. posed, for purposes of discussion, the notion of a hypothetical system or device that he called a Doomsday Machine. Given some predetermined triggering circumstances which it was the purpose of the builder of the Machine to deter, it would automatically destroy all life on earth. He said he thought it could be built, as of the time he was posing this in the late Fifties, he thought he even knew how to do it. It would be expensive but relatively cheap compared to the costs of the Strategic Air Command, which it would theoretically replace, at least for the purposes of deterring major attack on the US or its allies.

He distinguished it from what he called a mutual homicide machine which would destroy all or most life only in the two combatants, the U.S. and the Soviet Union. That last had an uncomfortable resemblance to the existing strategic forces of the US and Soviet Union, considered as a coupled or interacting system. That was assuming that both sides took the precautions RAND was recommending to ensure that the Soviet Union's SAC, or SUSAC as we called it, couldn't destroy it in a disarming first strike. This last would be very much more expensive than Kahn's Doomsday Machine (DM), because it would presumably involve creating nuclear explosions on the opponent's own territory: primarily air bursts, if it were desired to limit deaths from fallout to the population of that country. So each side would have to have expensive systems, planes, missiles, submarines, capable of delivering warheads intercontinental distances through enemy defenses. Both the vehicles and their bases would be vulnerable to nuclear attack-including submarines in port—so there would have to be elaborate and expensive warning systems to permit them to launch on warning in order to survive and retaliate. In short, pretty much what the US had built, and what the Soviets were presumed to be acquiring, perhaps even ahead of us.

In contrast, if the Doomsday Machine depended on explosions—or even if didn't, if it released uncontrollable and global biological effects or pandemics, or somehow harnessed major environmental disturbances (as Kahn conjectured would be most effective)—they didn't have to be on the opponent's territory. So they didn't have to be conveyed over there, or penetrate enemy defenses. And they wouldn't depend on

complicated, fragile vehicles that had to be based on or near the surface of the earth, making them vulnerable to attack, especially without expensive warning systems of radars and satellites. The necessary devices could be buried very deep underground, or deep in the nearby oceans. That's why the DM was relatively cheap.

Its drawback, of course, was that if it failed to deter the preset circumstances that would automatically set it off—several nuclear explosions on the territory of the US or its allies, say, or a major non-nuclear attack on our European allies—it wouldn't kill only the Soviet attackers but also our allies, and, and among others, their neighbors.

But that's what SAC did, if our prevailing plans were carried out! (SAC used few airbursts, so fallout from attacks on the USSR and its satellites would kill a hundred million or so of our NATO allies, depending on which way the wind blew). The DM would kill us too, but then, SUSAC would now take care of that, according to our then prevailing estimates. (These were wrong, but reality caught up with them by 1964, and ever since).

Remaining problem with Kahn's DM: it would kill *everybody*, southern hemisphere too. That was the price of its being so relatively cheap; it wouldn't try to be discriminating in its victims. That was its big drawback; that and its automaticity, though that was also one of its main virtues. Whereas threats to kill hundreds of millions of enemies, at the cost of losing hundreds of millions of one's own population, lacked total credibility, the DM—triggered, by deep-buried wires carry signals from electronic, seismic and radiation sensors sensitive to nuclear explosions in our territory or out

allies'[1]—would loose its effects inexorably, without the possibility of human intervention to cancel it. But Kahn reported that most in his elite audiences of national security professionals were uneasy with the thought of buying credibility so inescapably, making everyone on earth hostage to machine reliability. It killed too many people, too automatically. Though in all candor (characteristic of Kahn) he had to admit that he found a disquieting number of engineers attracted by the idea, its simplicity and economy.

But engineers didn't make the final decisions on national security. Kahn concluded that no nation would buy such a system. At least, no major nation; smaller nations might be drawn to it, as a low-cost deterrent. But no one, he thought, would build it inadvertently, without meaning to or aiming at it. It could be a lot cheaper than SAC, but still expensive and complex enough that it would take conscious decision-making and determined effort to install it, during which time sober reflection would abort it. It would never be built.

Edward Teller, the "father of the H-bomb," went further. He said frequently that a Doomsday Machine *couldn't* be built, at least not using his progeny, thermonuclear weaons. He didn't use that precise language. He and his acolytes took strong exception to the very concept or possibility of "omnicide," a term invented by John Somerville for the killing of all or nearly all humans. "Omnicide," I heard him say once in my presence, "is *impossible*." He said this in answer to a question I posed him, at a hearing of a

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[1] How it was to recognize and react to a Soviet invasion of West Europe, Kahn didn't spell out. Tanks rumbling east to west across the West German border?

subcommittee of the California legislature on the bilateral nuclear weapons freeze in 1982.

He went on to intone, in his authoritative-sounding, gutteral, Central European accent, what he had said a number of times before: "It is *impossible* to kill more than *one-third* of the earth's population with thermonuclear weapons." (I always heard this as, "the glass two-thirds full.").

He was wrong. Everyone makes mistakes. It was just one year later that scientists published calculations indicating that one thousand of his weapons (the US and SU had between them about 20,000) could kill close to three-thirds of the earth's population. (More recent calculations have drastically lowered the number of warheads required for this effect.) That would result if they were used the very way they were always planned to be used, against lots of cities. The trick was to treat cities as *kindling*, to create fires and smoke in the form of firestorms that would loft the smoke into the stratosphere, where it could not be rained out and where it would quickly spread around the world, blocking or reducing sunlight to the point of freezing fresh water and killing harvests and other vegetation for a decade or more. Nuclear winter.

Nearly all animals that depend on eating vegetation, or, like humans and all other predators, eating animals that are vegetarian, would starve. Not all humans. We are so adaptable that some very small fraction will probably survive nuclear winter, eating fish and mollusks on some coastal areas and islands. No other primates and hardly any

vertebrate species will avoid total extinction. Nuclear winter has come to be known more descriptively as nuclear famine.

This result relies on a weapons effect, lofted black smoke, that neither Teller nor Kahn nor anyone else had considered at all until 1983, forty years into the nuclear era. That was an odd omission, in a way, because the main damage-producing effect of thermonuclear weapons, especially air-burst, is to radiate intense heat over enormous areas, creating firestorms. To reverse the proverb, where there's fire, there's usually smoke. *Hundreds of thousands of tons* of black smoke and soot, it turns out, in a nuclear attack including many cities. (Smoke from large forest fires, on which there is much more data, does not generate such black particles as burning cities and industry.) No Americans had arrived at such an estimate before 1983 (though Soviet scientists may have secretly come to that conclusion somewhat earlier).

Perhaps part of the reason for this belated investigation on the American side was that SAC planners didn't and still don't calculate, or even consider, the effects of fire at all in their estimates of damage from nuclear attacks, either by us or by the Soviets. This surprising omission was first noted and published by Lynn Eden (see *Whole World on Fire,* New York, 2004). The planners' reasoning was that fire damage was too hard to predict, since it depended on winds (as does fallout), weather, flammability of materials, and so forth. Perhaps another, unexpressed, reason was that to include fire damage would

lower the number of warheads and vehicles required to produce given levels of damage, thus lower budgets and forces.

In any case, Herman Kahn, too, had been spectacularly wrong twenty-odd years earlier, when he conjectured that no major power would build a Doomsday Machine (for what seemed obvious reasons). At the very time he was giving classified lectures in 1959 and 1960 expounding his ideas, a Doomsday Machine was already in existence. Although neither he nor anyone in his audiences knew it (or really, anyone in the world), the U.S. Strategic Air Command *was* such a system. The smoke from the roughly thousand cities SAC planned to burn in the Soviet Union alone, along with those in East Europe and China, lofted into the stratosphere by firestorms, drastically reducing sunlight and blocking harvests for more than a decade, would have produced a full-scale nuclear winter.

Perhaps two-thirds of humanity might have survived the immediate blast, heat, radiation and fallout from SAC's weapons. In this limited sense Teller's estimate was strikingly accurate! But nearly all of these two billion survivors (in 1961) would subsequently have starved to death as food supplies ran out, within a year or so. (Both those estimates would almost surely apply today, for most and perhaps all of Major Attack Options (MAO's) of the U.S. Strategic Command, successor to SAC.)

And although the actual system was not fully automatic—human intervention was built in at various levels, and in fact saved us all more than once from imminent

responses to false alarms—the human components were not fully reliable, either. Both of those statements apply today as well. Human error has been responsible for some of the most serious false alarms: e.g., in 1979, someone putting into the operational U.S. warning system by mistake a training tape simulating a full-scale Soviet attack.

Again, someone failed to pass on to the Russian warning system in 1995—both sides still being on hair-trigger alert years after the Cold War had ended, as they remain today—notification that a missile apparently headed for Moscow from the region of the Baltic Sea was actually a Norwegian weather probe. President Yeltsin was awakened in the middle of the night and confronted with his options for immediate nuclear response, on his briefcase-sized nuclear command console. He hesitated, against the urging of some commanders at his side, until minutes past the time when the missile--if it had been from a US submarine--should have impacted. So we are here to read this.

At the time Kahn was presenting his recommendations (against building a hypothetical Doomsday Machine, among other things) there existed, unknown to Kahn, one actual Doomsday Machine in the world, but only one, America's SAC. A few years later, after their setback in the Cuban Missile Crisis and after replacing Khrushchev--who was blamed among other things for that humiliation and for having put a ceiling on the Soviet strategic forces--the Soviets under Brezhnev built their own DM, in imitation of ours. Neither knew at the time that the forces of each of them had literal doomsday

capabilities, nor that their planned attacks would have this overall effect. That wasn't revealed for another twenty years, with the scientific revelations starting in 1983 of the effects of smoke in the stratosphere from thermonuclear attacks on cities. In 1960, under President Eisenhower's command, SAC was targeting for attack every city in the USSR over 100,000 population (over 200), most towns down to 25,000 people (800 of these), and every city in China as well. All these to be burned at quickly as possible in the event of "armed conflict" between units (more than a brigade of division) of the US and Soviet Union, anywhere in the world.

With widespread delegation of authority to launch nuclear weapons in circumstances of communications outage—a daily occurrence—the system was not fully automatic if Eisenhower's broad conditions for general nuclear war appeared to some commanders to be met. But it was not far from it. (In the language of small arms, semi-automatic.)

In other words, contrary to Kahn's intuition, one nation's military—our own—*had* inadvertently constructed something very close to a Doomsday Machine, though they didn't know it for another twenty years (and probably haven't fully acknowledged it, even to themselves or the president, to this day). It wasn't a cheap one, of the kind Kahn suspected he knew how to make. It *does* rely on surviving or preempting enemy attack and *transporting* warheads thousands of miles, accurately, to hit Russian cities. Or now (since "cities *per se*" have been dropped from the targeting descriptions, about the time

we finally ratified the genocide convention), to hit deep-buried command centers in or near cities, missile fields near towns, submarine bases in port cities, air defenses and transportation and communications and vital industries within inland cities. The MAO's, at least,--the options by far most likely to be used, either initially or after escalation--do the job of burning enough cities, far more than enough, for the stratospheric smoke to cause nuclear winter and global starvation.

Would US leaders have constructed strategic forces on this scale and character if they had known about the smoke effects long before 1983? Hard to say. What we do know is that once the two systems were in place, twenty years before the first scientific papers on nuclear winter appeared in 1983, they have been maintained throughout the thirty years since. Both still on alert. Both still with ample doomsday capability and the associated targeting. Both are now about to reproduced and "modernized" at vast expense.

This despite the fact the presidents in the early Eighties of both the USSR and the US, Gorbachev and Reagan, were sufficiently alarmed by the accounts of nuclear winter that they held unprecedented discussions (in Reykjavik, 1986) of abolishing all ballistic missiles and even all nuclear weapons. These came to nothing at the time because of Reagan's determination to break through the Anti-Ballistic Missile Treaty in developing his (infeasible) Star Wars defense system, and Gorbachev's insistence on maintaining the ABM treaty, the main achievement of arms control negotiations to that time. And such

discussions of dismantling the Doomsday Machines were never repeated in the years since.

The numbers of warheads on both sides have been very greatly reduced, yet still remain vastly greater in city-burning capability and planned targeting than needed to produce full-scale nuclear winter. This has been confirmed by recent scientific calculations in the last decade that have predicted global effects from given levels of attack even worse than originally reported.

For half a century now, each side has had the capability to destroy all complex life on earth—simply by executing its existing nuclear war plans--by what is now a known mechanism, mechanism that was not envisioned at the time Kahn was writing. Or even twenty years later--when Edward Teller was pontificating--forty years into the nuclear era, which may be said to have begun in 1942 with the Manhattan Project.

Now a key element in the working of that machine is the potential targeting of the existing nuclear weapons.

On the other hand, if the targeting is done on cities—directly—a surprisingly low number of warheads and low megatonnage will accomplish this climatic catastrophe. Catastrophe for humans. In fact, 100 megatons, the equivalent of 100 million tons of TNT. They specifically looked at an attack with a thousand warheads of 100 kilotons each. A kiloton being a measure of 1,000 tons equivalent of TNT, 100 kilotons is five times the Nagasaki explosive power but is a very standard weapon among strategic weapons now and not even close to being the largest of those. For example, the MX is scheduled to have 10 warheads per missile, each one of which would be 350 kilotons, and 100 MX would be a thousand such warheads. Now a thousand 100-kiloton warheads then, targeted on cities, which is not the primary target for the MX, would give you this catastrophic effect. So the thousand MX warheads, which are of course in addition to our current inventory of some 10,000 strategic warheads, would by itself have the capability then of causing this global effect. Remember the effect need not only be caused by one country. If one country hits 500 such targets, let's say, and another country hits 500, it's a cumulative effect. So that you would get this effect.

A hundred megatons, which we can imagine to be 100 separate warheads of 100 kilotons each, is eight tenths of one percent of the strategic stockpiles of the two sides. The two sides have some 20,000 strategic warheads, or close to, adding up to about

13,000 megatons. So 100 megatons would be less than 1% of that stockpile. That is ignoring the 20,000 so-called tactical weapons which the U.S. has and perhaps 15,000 or 17,000 tactical weapons which the Soviets have. So-called because they are shorter range weapons for more battlefield use or intermediate range use and they tend to be smaller, although they range from let's say... they average actually the size of the Hiroshima weapon, which was about 13 kilotons. They get down as low as 1 kiloton, or have been even less, but some of them range up to half a megaton—500 kilotons. They are weapons which are classed as tactical weapons.

Twenty years ago Robert McNamara calculated that some 400 one-megaton weapons—400 megatons—delivered on the Soviet Union would destroy the Soviet Union as a society, kill a third to half of the population, destroy some two thirds to three quarters of their industry, and would, he felt, be adequate for deterrence. In that category. We can now recognize that his 400 megatons (which were measured against their destructive capability on cities), if delivered on cities, as was part of the plan, would be four times the megatonnage necessary to destroy all life on earth. So it was, indeed, an adequate deterrent.

But we have, as is well known now, some 10,000 strategic weapons (not all in one megaton), which has in many minds raised the question as to why this excess. And as you heard in my first lecture, I think it's because those weapons were not intended for retaliation on the whole, or to deter nuclear attack on the U.S. by posing a threat of retaliation, but were for something else. They were threatening weapons. Not using

weapons. But the threat was to initiate nuclear war or to escalate an ongoing tactical nuclear war and thereby defend U.S. global interests outside the continental United States. They were to threaten the initiation of nuclear war by the U.S. in the event of a nonnuclear challenge which we could not handle with nonnuclear means.

Something else needs to be put into the picture though to define our problem, and I did that—I'm just linking this lecture to last week's—I did that last week by pointing out that the notion of using such weapons against cities is not a mere hypothetical possibility. It is not merely a way that a nation with a limited number of nuclear weapons could threaten catastrophic global results, although it is that. It does mean that an ultimate threat could be wielded by a relatively small force. For example, the French are on their way, within a few years, by MIRVing their warheads, their weapons—that is, putting multiple warheads on their limited number of submarine and land-based weapons, they are moving toward 1,000 warheads in a few years. This is the catch, by the way, in Soviet proposals to match their forces against British and French since in fact the British and French warheads which add up to 162 now (roughly) are about to escalate very shortly. And the Russians, among other things, probably want to deter that. It is not only the Soviets who have some interests in averting another country getting this world-destroying capability.

But the particular piece of information, which is not emphasized in Sagan's articles (and he may not be fully aware of it), is that our war plans always have targeted on cities. Not only, and not even especially, particularly in the era when we heard a great

deal about mutual assured destruction and heard very little about counterforce. The truth is there has been no great shift in the last 10 years or 5 years from a mainly city-busting strategy to an exclusively or mainly military strategy. You've heard a great deal, if you follow these things at all, about such a shift from mutual assured destruction to counterforce or prevailing or winning—I'm going to be discussing later in the course what the reality is of the evolution in our plans and our forces—but it has almost no relation to these public accounts, even [for] those who think of themselves and present themselves as being well informed. There has been no particular shift in the nature of our targeting—in the qualities of it—of that sort in the last 10 years. Since we had enough nuclear weapons to target both cities (which were the original targets for nuclear weapons) and military targets—and that has been since the early 1950s, our plans have always included both cities and military targets. And increasingly the proportion has favored so-called military targets since, as I've mentioned, there are only 218 cities in the Soviet Union of over 100,000 population.

As Desmond Ball pointed out (and here I'm repeating things that I said last time), our plans now have always essentially had since the early '50s all of those 200 major cities in the Soviet Union on our target list for attack, and about 80% of the 800 cities that are over I think it is 25,000. In other words, small, medium and large Soviet cities get targeted, and that still leaves many thousands of warheads left over essentially to target on military targets of various kinds.

What was startling for me to discover in 1960 and '61 was that this plan for hitting cities was not only premised on retaliation to a Soviet attack on us or on our allies (nuclear attack) but rather was essential to our first-strike war plan. Whether you regarded that as a realistic possibility of not, it certainly was a threat that we would escalate to a first strike. It took me a long time to take seriously the fact that the United States Air Force and Strategic Air Command conceived of hitting cities—essentially all Soviet and in those days Chinese cities—on an initial attack, in fact, in the very earliest days. In fact, that made it hard for me to believe that what I was looking at was a first-strike plan, even though it was on its face.

I thought it really was a second-strike plan pretending to be also usable as a first-strike plan, because logically it seemed to me hard to imagine that we would destroy all hostages, in effect, at the outset of a war in which we could not (as I believed) expect to destroy all Soviet retaliatory capability. And yet we seemed to imagine that we would... that it was in our interest to again... an attack by not only... by hitting every city in the Soviet Union, leaving them with very little incentive to withhold any of the military capability against us that they had left. Moreover we planned to hit all of their command centers—above all, Moscow—which would seem to make it impossible for them to withhold remaining strikes, just as if we had attacked Tokyo with our first atom bomb and killed the emperor and made it impossible for the emperor to order the armies in Manchuria and elsewhere to surrender, so that in various parts of Asia and the world Japanese armies might have fought on for many years, suicidally, as they were surely

willing to do, had they not had that order from the emperor. Indeed, General Groves, head of the Manhattan Project, who was involved in targeting proposals, wanted to hit Tokyo on that first one, and when he failed to get permission to do that still proposed that for the third bomb, which was coming up by the end of August.

To understand our current war plans, what is known of them now, it helps a lot to understand our war plans of 1961, which we'll be going into. To understand our war plans of 1961, which had very many peculiar characteristics to them (some of which I mentioned last time), I've discovered it's extremely illuminating—I'd say it's essential—to understand the war plans of the late '40s (the nuclear weapons), which to my surprise had almost exactly the same character although the strategic environment was entirely different.

What we will be talking about today are the roots of all of that planning. Every year of the nuclear era. To Air Force plans in the United States and in Britain in World War II. Because practically every characteristic of the plans today and in every year of this nuclear era reflects concepts, expectations, beliefs, controversies, and a small amount of learning from the actual experience of applying these concepts in World War II. It reflects in short what was known long before WW II as strategic bombing doctrine. And the heart of strategic bombing doctrine was the use of airplanes against cities.

Let me bring your attention to something on the front page today of the Los Angeles Times. "Shultz Says U.S. Waves Lebanon Preemptive Raid." The word "preemptive" comes out of strategic bombing doctrine controversy essentially. I'm

unaware really of what the etymological roots of that word are, but it appears very early in literature on bombing and long before the nuclear era. The earliest, and I'll be discussing it more, but the earliest theorist of the use of so-called strategic bombing was an Italian general named Douhet (doo-way) or Douhet (dow-it)—the two pronunciations are used about equality—D-O-U-H-E-T, who laid down a number of these principles, as I say, that are still part of what can virtually be called a strategic bombing "cult." It's officially called strategic bombing doctrine, but it's a set of beliefs that are often observed as having a religious character—a character of faith—and certainly as beliefs that are a badge of membership in a certain elite body of military men. And one of those principles was that the proper use of the bomber and the characteristics of the bomber gave an overwhelming advantage to the side that struck first in massive force with great concentration of... there were controversies to some degree of what should be struck first, but Douhet's emphasis in particular was on cities, for what he called the morale effect—for having a paralyzing effect on the other side's will—will, not capability—to carry on the war.

When nuclear weapons came in, again it was certainly observed very strongly within the Air Force that this gave even stronger emphasis to the notion of getting in the first blows. Because the nuclear weapon promised such massive effect, the side that got its blows in first had a chance to collapse the will and capability now [of] the other before its own side was paralyzed. So preemption has in fact been central to planning really on everyone who has taken seriously the building up of strategic bombing force, which was

in particular Britain and the United States. In fact, the emphasis there was on accepting those retaliatory blows and hammering away as fast and as massively as you could at first. Get a decisive result very quickly and with as small damage to everyone as possible. It's been associated with air power ever since. When various people—above all Richard Pipes working for Reagan—publicized the fact that the Soviet manuals (now that they had a sizeable strategic rocket force) emphasized the advantages of preemption, and he made that sound extremely sinister—as it is in a sense with its dangerous implications—either he was totally ignorant of U.S. Air Force manuals (which is quite possible) or totally disingenuous (which is also quite possible) in failing to mention that they were simply translating U.S. Air Force manuals in this emphasis on preemption. On getting in first if possible.

Well, in this context, it says George Shultz said Sunday that the administration might launch (now speaking [in] nonnuclear terms) a preemptive strike to forestall a new suicide attack on the United States Marine Force. And expressed deep concern about "the emergence of terror as a kind of weapon of war by states." [When] Shultz [was] asked if he would use force to head off a kamikaze-type attack such as the suicide army truck that killed 241 U.S. servicemen in Beirut—a kamikaze attack on our naval ships holding marines in that area—Shultz replied, "Yes, I think we have to be very conscious of the rise in terrorism not only in Lebanon but around the world. It is increasingly evident that terrorism has a base in the state. It isn't some random crazy group. It's something that is organized systematically. People get trained for it."

Terrorism doesn't have a widely accepted official designation, but in the dictionary and elsewhere and in usage it mainly applies to the deliberate organized killing of noncombatants—of civilians—for political purposes, thus reaching the principles of just war doctrine which base themselves on an inviolable distinction between combatants and noncombatants and which proscribe (forbid) any deliberate killing of noncombatants. And terrorism is by definition the deliberate killing of noncombatants.

It's not obvious, then, that bomb attack, though suicidal and by a civilian, perhaps, on marines who are on duty being perceived rather reasonably as parties in a civil war, it's not obvious that that's a precise use of the word terrorism. Nor that a kamikaze attack on a U.S. ship would be correctly described as terrorist. That usage could be defended only by saying that our marines are there, in fact, in a Peace Corps role, which is what we do say, thin as that pretense is wearing. But be that as it may, there is a lot of terrorism in the world. And his point is that we are increasingly concerned that terror is an instrument of states.

The plans I've described this year, last year, every year for the last 30 and well before that, should be recognizable under that definition as plans for terrorism. One could say strategic terrorism, and indeed it is organized by states in which the British and the United States Air Force were first, really, in the '20s and '30s in organizing for it. They were not the first to apply it on a major scale. Hitler's blitz against London in the fall of 1940 was probably the first large-scale use that clearly fitted the definition of what Douhet and others have defined as strategic bombing. But as we'll see in this course, the

leaders—the civilian leaders of the United States and Britain—officially, deliberately, though secretly, adopted Hitler's tactics against London as their official basis for attacks in Germany from 1943 on. For the United States it was not initially the only basis. For Britain essentially at that time it was the only basis for their attacks. And as we'll see it became the only form of attack we really waged against Japan. This was done ~~secretly~~ [K: DE proofmark?] from that day to this because the public posture of both those democratic leaders, Churchill and Roosevelt, and then Truman, was throughout the war that they were observing, as well as could be done under the circumstances—technically, physically—the very old principles of the inviolability of noncombatants from attack. But I'm saying in a way this is one of the themes of this set of lectures that we must... the following is a fact and a fact that we will have to work to understand, and I would say to change. But in order to change it, I think it must be better understood than most people do in this country.

And that fact is that midway in the Second World War, these two democratic liberal leaderships adopted Hitler's tactics of terror bombing of civilians and secretly obliterated the distinction between combatants and noncombatants in their principal organized bombing operations, thereby secretly rejecting the just war doctrine which they continue to this day, really, publicly to uphold, and to uphold in part by stigmatizing people who are more obvious about violating it. How did this come to be, and why did it come to be, and what does it tell us about where the world is today and where it is going?

Those are major questions that I am putting to you in this course. And the first one of how we got there is the subject of this lecture.

Did I speak at all last time about the just war doctrine? OK. Let me put the historical evolution that I am talking about in a frame by mentioning where... what the United States position—official position—was at a certain noteworthy point in history: September 1st, 1939, the day that Hitler invaded Poland and the major part of the Second World War began. How many people here were living then? Could I see your hands for a minute and see how many of my generation are here? OK. Just a handful. On that day Franklin Roosevelt addressed this appeal to all the belligerent states:

> The ruthless bombing from the air of civilians in unfortified centers of population during the course of the hostilities which have raged in various quarters of the earth in the last two years, which have resulted in the maiming and death of thousands of defenseless men, women and children, has sickened the hearts of civilized men and women and has profoundly shocked the conscience of humanity. If resort is had to this form of human barbarism during the period of the tragic conflagration with which the world is now confronted, hundreds of thousands of innocent human beings who have no responsibility for it, and who are not even remotely participating in the hostilities which have now broken out, will lose their lives. I am therefore directing this urgent appeal to every government—British, German, Russian, and others—which may be engaged in hostilities to affirm its determination that its armed forces shall not in any event, and not under any circumstances undertake the bombardment from the air of civilian populations of unfortified cities upon the understanding that this same rule of warfare will be scrupulously observed by all their opponents. I request an immediate reply.

The same day, Britain replied agreeing with this. And within a few days Adolf Hitler agreed to this for the German government.

We'll be talking about how things went from there. But I think this is a very good benchmark as to what the conscience of humanity at that time did contain as a requirement and found natural and reasonable. And in fact, as we'll see, none of the governments that agreed at that time had at that time, had a plan, an intention, to bring about deliberate bombing of cities and a population. That intention did not exist at the highest level. And in particular, at least obviously, it did not exist, nor was it prepared for in the government of Adolf Hitler. In fact, it was not the German government that had a large segment of its military forces who had been preparing and hoping for such a form of military operation for a generation. Britain and the United States had what Britain called a Bomber Command or the Strategic Bombing Force in the United States, which in fact found that dual... bilateral or multilateral agreement constraining and regrettable.

How that came to be goes back really to the emergence of total war gradually out of a pattern of relatively civilized war in the so-called... in the 17th and 18th century, which in turn represented a civilizing, it was widely perceived, of the totally destructive religious wars—of the Thirty Years War and hundreds of years, really of religious wars that had preceded that in Germany and elsewhere in Europe, and was contrasted above all to the wars of the barbarians, Genghis Khan, Tamerlane and others, who had come in and regularly put European cities to the sword, killing all women and children, Genghis Khan occasionally doing something that Tamurlane had done long before and the Assyrians

had done thousands of years before—namely making pyramids of skulls of the inhabitants of cities that had resisted their attacks.

The 17th and 18th century and in particular the 19th century found the codification of a notion that may first have been articulated by Augustine for the Christian church—for the Catholics—and later elaborated by Thomas Aquinas and was later was picked up by international jurists as that field developed in the last couple of centuries. As I say, this was the so-called just war doctrine which put down conditions under which war could be engaged in at all. A just cause under competent authority, various other conditions under which a Christian could engage in war, that was the context of this analysis. But there were also conditions under which... what could be done in war that limited the kinds of violence and the amount of violence that even a Christian monarch could order and a Christian soldier could obey. Limiting that. Quite specifically. It was laid down in this Christian doctrine which was, by the way, taken up then by most of the Reformation churches starting with Martin Luther and then secularizing international law.

Even a just authority acting in self-defense, which was the main condition for a just war, almost the only condition for a just war, a war of defense against aggression—even a monarch acting in such conditions could not do just anything in the way of violence to an enemy, and very specifically and above all such forces must obey under all circumstances an absolute distinction between combatants and noncombatants. And

noncombatants (conceived quite broadly) were to be immune from attack—from deliberate attack—under all conditions.

The occasion for this doctrine really catching on and becoming important in the Christian church was the accommodation to empire between the early Christian church and Constantine in the 4th century. Prior to that, virtually all the Christians had been pacifists and had refused membership or induction into the Roman army, partly because an oath to the Roman empire was required, but also because killing of any kind and any preparation to kill was seen as inconsistent with Jesus's demands to love your enemies, to do good to them that hate you, which was interpreted... which they acted on in pacifist terms. As the church was taken up as the official religion of the Roman Empire and in fact spread quite broadly in the Roman army among other places, this condition was compromised, basically, and Augustine particularly laid down these early conditions under which it was acceptable and legitimate to do some violence. But you see again it's violence not in personal terms, not in individualistic confrontations, it is violence at the order of an authorized official state authority who in turn represented divine power, divine right. And, I repeat, only if it was pursued with a certain kind of restraint. And that is that the targets must be other military men who were, if the war was just, to be perceived as committing aggression, as doing injustice. And they who took up arms and were in a disciplined military hierarchy were subject to being killed by Christians, even if they were misguided Christians themselves. So it was in this context that the notions arose.

In practical terms, they were reflected quite a bit in certain fields. As I say, in the recent centuries in particular. The treatment of prisoners, for example. Military law which reflects this doctrine, and civil law says that a prisoner may not be killed, may not be held hostage even if he has been waging war up to that moment. At the point that he surrenders himself and is no longer an armed threat to you, to justice, to anybody else, he may not be killed. And if he is killed, it is murder. That is true, as I say, virtually all combatants to this day accept that. Moreover international law regards that as applicable to civil wars, to unannounced wars, to informal wars, to really all kinds of conditions. And that's a kind of extreme application of this approach.

The effect of that attitude and of other aspects of war in the 17th and 18th centuries in particular and even the 19th was not only the treatment of prisoners but on the whole a notion that sacking cities was barbaric, was outside the pale, was criminal. And starting around 1895 and 1897 with the Hague Convention, this increasingly became codified in international conventions which do exist now as international law, applicable in this country as the highest law of the land being treaties signed at Geneva, the Hague, elsewhere, including the UN Charter. There are a number of rules like this that rank with our Constitution—in principle in our domestic courts as well as in international courts like Nuremburg—that govern the kind of violence that can be done in wartime. And that definitely includes the deliberate destruction of civilians under any circumstances; deliberate, indiscriminate attacks upon cities.

Obviously there was a great deal of that done in the Second World War which was not prosecuted at Nuremburg. But the reason given for not prosecuting it at Nuremburg was that we had done it very obviously and a practical rule given that was not supposed to be binding on law was that that this international court did not choose to prosecute crimes of which it was self-evident that the judges and the judges' nations had been equally or more guilty. That seemed kind of a reasonable rule, but it has put the legal status of some of these things in some question since that wasn't prosecuted. Since WW II was the first major instance of strategic bombing, the deliberate bombing of civilians then hadn't come up earlier, and since it wasn't prosecuted, these principles haven't really been applied in courts, with a couple of exceptions (which I won't go into here), as possible... as very obvious in fact violations of the letter of international law. So there has been no direct prosecution of bombing per se, even though there is a great deal of law which says that these legal principles are valid, they apply, and the fact that they may not have been prosecuted in a particular case does not mean... and even the fact that they were not specifically mentioned, that there is not a specific mention of bombing, does not mean that they are not applicable.

I've gone into this not so much as to emphasize the possibility of bringing this sort of thing into the court—which isn't very great at this point—could be useful, but rather to show how clearly this was expressed as a principle that was regarded as binding upon all combatants, going back now in a sense about 1800—1700 years—and in particular being increasingly formally accepted by states over the last 300 years, and the

last 100 years in particular. So Roosevelt was really doing nothing more than reminding the various belligerents of what seemed to be the clear-cut principles of civilized behavior in warfare at that time. In that sense it was not surprising that the various belligerents, even Nazi Germany, would pay—give—formal acceptance to that right away. But something had been happening in the nature of warfare

CHANGE SIDE OF TAPE

and military men impatient or feeling constrained and frustrated by such a distinction between combatants and noncombatants. Even though, I'll repeat again and again, even though that distinction has remained lively in the minds and awareness of most civilians and nongovernmental figures so that it seems necessary for these officials to cover their own defection, defection from that moral and legal principle by lying about it and keeping the nature of their actions secret.

For one thing, a very key point was the French Revolution introducing really for the first time on a mass basis conscription. Earlier wars had been fought by small numbers of mercenaries, often foreigners, working for a prince, working for a warlord of some sort or a small state, and fighting each other and observing a lot of rules that were really aimed at keeping themselves, at keeping one's troops in the game as long as possible. Not demolishing... not acting suicidally and not really acting to demolish the

armed forces of the other, which wasn't really easily physically possible for a lot of military reasons I won't go into at this point.

The French Revolution on the one hand introduced a kind of nationalism, a feeling of widespread enthusiasm, support for a cause, not just for a monarch, not a personal allegiance, but a sense of esprit, of camaraderie, of patriotism which made it possible really to mobilize a nation militarily in a way that had not been possible in the previous several hundred years except on a small scale in terms of religious enthusiasm. This was secular and much broader. More or less at the same time industrialization started. And the two worked together to make the whole nation to begin to seem—or to be actually—participants, potentially in a war between states.

Rather than a war being something that the prince fought during good weather and not during harvesting season and pretty much away from the crops and certainly away from the cities—which it had been for some time—industrialization allowed the possibility for war of a very great scale, involving enormous numbers of patriotic, nationally mobilized people backed up by enormous amounts of artillery with logistic support to keep such an army in the field during the winter or, on the other hand, during the harvesting period. You didn't need, with industrialization, as many people back planting or harvesting the crops anymore—a consideration which had really made armies dissolve during that period prior to industrialization. And with war with industrialization achieved then with things like... as the machine gun came along, before that artillery, and the use in particular of the railroads for the first time really in the Civil War made

possible an enormous scale increase in the destructiveness of war. And potentially planted the seeds of what flowered in the strategic bombing doctrine of the notion that nearly every citizen of the opponent's country was a legitimate target since many, many of them could be said, reasonably, to be contributing in a rather essential way to the military operations—starting with those in war industries, which seemed to be most obvious, but also in basic industries that fed into the war, the steel industry, energy industries, transportation in particular, communications, and ultimately even the people who worked in agriculture, who made it possible by their industrialized efforts to field enormous armies of people who no longer were needed in the farm fields, to be put out. But that potential did not express itself right away.

One of the very first, however, applications of this new perception of the nature of warfare was Sherman's march through Georgia and his sacking of the city of Atlanta, which is often associated with Sherman as though he had invented this particular savagery but actually it was part of Grant's general strategy of attrition, which in turn reflected very much Lincoln's notion which can be seen in retrospect as having very many aspects of the concepts of total war involved in it. He definitely backed up both Grant and Sherman on this point. And Sherman, who is often remembered for this statement, "War is hell," did not make that statement just as a random observation in casual conversation. His theory of war was that war should be made as close to hell as possible for those that were opposing you so they would end it quicker. They had the option of quitting. And the innovation that he introduced—which was observed from

Europe as a form of barbarism and in the South, to this day, is remembered as a form of barbarism—was to attack the city of Atlanta and rather than just in effect holding it for ransom or holding it for siege—trying to invest it—he destroyed most of the stores in it. He sacked the city, as one could say—not so much the people—but the burning of Atlanta some of you may have seen in the movie Gone with the Wind. He then moved from Atlanta to the sea, burning stores, burning fields, logistic supplies as he went, partly to destroy the supplies of the other armies opposing him, and partly quite explicitly and openly, not secretly, to terrorize the people there, to make them realize that they must pay a price for supporting this operation either physically or in allowing their leadership to continue with the war. And he said that over and over again, that that was his purpose, and it was carried out that way.

There was a warning in that operation, which was a large-scale attack on the economy of an opponent which was warning of a possible innovation coming in warfare. Despite that precursor, this wasn't fully realized in the First World War, which was conceived on the contrary as a war of soldiers fighting soldiers. And in fact civilian losses from actual military action were quite small. In fact there aren't very good statistics. They may have been numbered in tens of thousands, perhaps a hundred thousand over the course of the war. Millions died by famine. And that in turn by the way was considerably related to the British blockade of Germany, which was a deliberate attempt to reduce food, did affect birth rates, sickness rates, death rates, very considerably, and some calculations indicate may have killed or brought to a premature

death perhaps 800,000 to a million people by the operations of the British blockade. We have that calculation in particular because strategic bombers rather regularly used to bring it up as indicating that bombing was, after all, a good deal more humane than the blockade alone of the First World War. And there is something to that. There is a relation. Both are attacks on the economy. Both attack civilians largely. It doesn't necessarily follow that one justifies the other or that either are justified. That was the way it was used.

The people who died in the First World War directly from the operation were military. Thirteen million soldiers died out of perhaps 65 million all around the world. Some give smaller figures. Between 9 and 13 million soldiers were killed in the First World War. And in the minds of a lot of soldiers, that eroded the significance in their eyes of the distinction between combatants and noncombatants as a basis for restraint in warfare, or for strategy in warfare.

I've mentioned that the word terrorism applies to any deliberate killing of civilians. That isn't often a word used in connection with military operations. Massacre is another word well used—a pretty technical word with a lot of emotional overtones—for the deliberate slaughter of civilians. A massacre as in the Sabra or in Shatila massacres by the Phalange—by the group we are supporting with our marines at this moment in Lebanon.

So a lot of military men could look at the death of soldiers on the fields in France and Germany and elsewhere and that looks something like a massacre to them, even

though these people were wearing uniform. On the first day in September of the opening of the Battle of the Somme, 60,000 British soldiers were killed, missing and wounded. Mostly killed. Sixty thousand. And within a few months, 600,000 British and 600,000 Germans had died in that campaign which moved battle lines a few miles from time to time one way or the other. The next year in Passchendaele campaign, General Haig (not current General Haig but a namesake of rather similar military characteristics) sent men into fields in Flanders—this is the origin of the phrase Flanders Fields or the poem Flanders Fields which was heard—in an area where shelling had destroyed the dikes. And the rainy season came about that time as usual—he had been gambling that it wouldn't this particular year—turning the fields into impassable bogs of mud several feet deep. Every shell hole became a pool, a small lake of water, and it was a literally impassable barrier which the staff never visited really from their headquarters in the rear. And day after day and month after month Haig continued to send these men, dying 10,000 at a time—on a morning—into this mud and barbed wire, again with lines moving a hundred yards one way and a hundred yards another over the course of a year.

Some military men such as Lord... who later became Lord Trenchard and the founder of British strategic bombing, flew over that battlefield in various roles—reconnaissance, artillery spotting. And that entirely self-serving, partly self-serving notion, there has to be a better way of fighting war than this, as they looked down at these people dying in the mud and the wire down below them. It was self-serving in this way in that it seems to have been not army men but airmen who all got the idea that the better

way was the air force. That the airplane offered the possibility of moving over that barbed wire and moving over those opposing troops who had proven to be impenetrable essentially with the help of fortification and machine guns. And moving over into the what seemed vulnerable civilian economy. The notion... These were men who were very excited by a mystique of flying. They loved to fly, without exception—they were flyers themselves. They weren't desk men essentially. Like flyers today, they loved the machine, in effect. They were (and still are) as much in love with these machines that they rode as the horsemen of Genghis Khan or the nomads earlier had loved their horses. And it led to a very interestingly similar style of warfare.

Genghis Khan's nomads went all over Europe. They were not really able to stay around very long to besiege a city. And that was the element of coherence and purposiveness in Khan's quite deliberate tactics of sacking cities and destroying them in that he wanted by terrorizing the inhabitants of cities to induce them, to motivate them to surrender quickly to his nomad troops before they ran out of forage around the cities, since they weren't able really to stay there very long. Just as planes can't stay very long over a city and can't occupy it, they have a certain tendency to sack it. That's about all they can do.

It was in the context of the progress of war to a slaughterous process in which as I say millions and millions and millions of what were often defined as the finest young men of the country—thinking in particular of the officer class—a war that killed off the young generation of the aristocrats or even the upper middle class as junior officers of

France and Germany and England in a few years. Simply killed off all the military academies, killed off the younger sons of the elite. And there was a very strong and widely held belief socially, never again. Never this kind of war. Never World War I again.

In some people that reflected itself, never war again. In the military forces, that was not the reaction, but there was very great pressure in trying to find another way of fighting wars, and in particular not just of losing fewer soldiers but of reaching a decision. World War I didn't really end until one side just collapsed. The Germans finally collapsed. There was no military decision, no great breakthrough at any point in the course of the war, just a blinding slaughter as I say made possible by the ability of these countries to draw on the nationalism, the patriotism of an entire generation, and one after another generation of young men, to send them into the field into this hopeless, indecisive slaughter.

And enthusiasm which showed up in all classes and which essentially destroyed the quite fast-growing Socialist and Social Democratic movement, to the horror of the large numbers of Socialists in Europe, Marxists and others, in Germany in particular where the largest was. Every Socialist movement in Europe signed up in support of the war credits and went off to the war, to the horror of many of the leaders, Fighting workers of other countries. So on the one hand you had this social phenomenon and on the other hand an ability to slaughter those people and keep the slaughter up indefinitely because the war machines of the home country were able to provide food and uniforms

and bullets and above all artillery shells at rates that were just inconceivable at the beginning of the war.

As a matter of fact, one of the reasons the rulers were willing to go to war in the beginning, large as they knew it would be, was that they all assumed it would be over very quickly, for simple economic reasons. They knew their plans for the use of the railroads, for the use of fuel, for the use of shells, and they couldn't ~~conceive~~ that they or their opponents could keep up that rate of supply more than weeks, or a month or two. They astonished themselves with their ability to mobilize their industries in support of that war to keep it going, it seemed, indefinitely.

A ~~major~~ one way of getting out of this deadlock that military battle seemed to become was to utilize tanks and airplanes as combined arms of a ground commander, as was done by Germany in their attack on France ~~and by~~ a number of ~~countries~~ very successfully. A ~~massive use of tanks.~~ And that's getting away from the stalemate of the Western Front of the First World War. So the Second World War did not show that phenomenon.

The other theory that offered itself to some airmen—only airmen, ~~no military,~~ no army people had this conception, no navies to speak of; ~~tankers did not see the airplane as the result— a lot of airmen conceived~~ that air might win the war by itself if it were properly used. And properly used meant using long-range bombers that could carry a heavy bomb load—planes that did not exist really until about 1941 or '42. But the conception of them was as early as 1912 before the First World War, certainly during the

First World War. A bomber that would carry a significant bomb load—a ton or more (the heavy bombers came to carry about 10 tons) of explosives—deep into the enemy territory and drop it on the capitals and the major cities of the other country.

There was some precedent for this even early in the First World War and throughout. ~~Both~~ the British bombed Germany to some extent. The Germans in particular sent zeppelins and planes over London 40 or 50 times—killed a significant number of people. About a thousand probably, but by those standards, since Britain had been inviolate from attack up till then, a noticeable number of people. In particular a great deal of panic was caused, and this had a very strong and regrettable effect on the planners of all nations, the degree of panic that these early air raids did cause when they first appeared.

The notion then was by Douhet and others, the main notion ~~I've mentioned preemption, I could mention a few other things—but the main notion~~ was that [with] a relatively small number of bombs measured in hundreds of tons to thousands of tons (we're not talking megatons or kilotons now; these are the original tons of dynamite), you could cause such panic as totally to disorganize the enemy's centers and cause enormous pressure on the rulers to end the war, for we're done quickly. A somewhat larger tonnage, if necessary, would actually annihilate those cities—in particular using fire or it was thought poison gas at that particular time. Now gas was on its way to being banned and became banned because of the results of the First World War. And of course attacks

at same time, Brothers fears — morals.

on civilians were regarded and were described at the time as just unconscionable, unthinkable barbarisms.

Harmon affected to... War begins

If we are trying to understand how the United States got where it is today, and my purpose in bringing this up in this course is not to condemn and not judge, in fact, but above all to understand and to understand indeed in a way that will make it possible to change, I think starting with the notion of condemnation is probably not the best way either to understand or to change. At any rate it is not what I am doing in this lecture or in the other cases. I am not stretching for things that will extenuate, will excuse these people, what they did, though it may seem that way. But in fact it is useful to try to understand how people who are not unlike ourselves or our fathers and brothers did come to get involved in operations that were seen at the time by most other people and before that as simply unthinkably immoral operations. Of course, another hypothesis is that these men were entirely different from people we know, you know, that they were secretly evil men in some... the way we usually think of those terms. Simple criminals, psychopaths. And that turns out not to be the reality. That's possible. I'm convinced at this point that that is not the way it came about and that is not what we are dealing with.

So the first point to realize then is that these men had two motives, both fairly conscious to them, one which they were able to say a little more publicly than the other. One was a desire to have an independent air force, to get out from under the thumb—under the control—of armies which they felt were ground soldiers who didn't understand

SIOP-62 was not influenced by missile gap

the potentiality of air power, didn't understand the machines, didn't have the enthusiasm for it, didn't have the vision to see what could be done.

From early on, planes were quite expensive devices, and the kind of bombers that these men wanted to fly and thought would be effective were extremely expensive. I think the B-29 cost $800,000, which was an amazing sum for one item of military hardware for that day. It took I think 6,000 gallons of aviation gas on a single mission. This is at the end of the war—the largest bombers. So only quite rich nations could possibly afford a bombing force of this sort. But you could only get it in competition with the other military services, and if you were competing with the artillery, with the tanks, with the infantry, and they were determining your budget, the likelihood of getting this type of aircraft which you honestly—which you not only wanted to fly, but you honestly believed was of enormous importance—the likelihood of getting that out of let's say battleship admirals or infantry commanders as a matter of budgeting was not very great. So from early on the airmen had an obsession that they must have a separate air force which would have its own bureaucratic base to fight for its own fair share, which was at least they felt a third of the budget and which by the way in a nuclear era came to be a lot more than that under Eisenhower and certain other periods. They wanted then a doctrine which could justify their being a separate service. This was a long-time principle which applies to until fairly recently because as late as the Second World War the American air force was still under the Army, and although the British had gotten independence as early as 1918 they were always fighting the possibility of being put back

1941?

under the navy or the army. And even today our Air Force continually fears the propensity of the Army or the Navy to build up their own independent competing air forces which will compete with budget for the Army Air Force.

This gave a lot of incentive to believe a doctrine that they did believe, that if bombers had their own air force and thus their own budget and had enough money to buy enough large bombers of the fast, technologically advanced kind that could get through the defenses of the enemy and launch its bomb load—if it could do that, these men came to believe they either could win the war decisively quickly or at worst they could make an enormous critical decisive contribution to the winning of the war. If they didn't get those planes, if they didn't have an independent service, they couldn't do that.

What I am saying is that there always has been institutionally in these air forces a very strong incentive to believe that the air power by itself can do things that in fact it can't do. Always the expectations got ahead of the technical capabilities of the time. Were enormously exaggerated. I'm saying that on the one hand this was sincerely believed and on the other hand it was believed without much evidence. Remember that in the '20s and '30s as they were preparing for this, there was no combat experience to go on to speak of, and what combat experience there was in the Second World War tended to be quite negative. So these beliefs were held in this fairly religious way. And I think we can account for that in part by the fact that they had to believed. It was very important to believe that air power could be decisive if it got away from the Army and the Navy and developed on its own. This was possible only... It turned out to be the

case... Let me put it this way, It was done only in Britain and America. Only in Britain and America did Douhet's theories, which appealed to airmen in every country in the world—Russia, Germany, everywhere, liked the idea that bombing could have this decisive effect—but only in two countries did the political leadership endorse the idea of building up a force for this purpose. An independent role for the air force.

The word strategic came in to refer to an independent role for the air force hitting... going away from what were described as battlefield targets. That was called tactical bombing. Tactical bombing in close association with the army—with the engaged military forces. And to make a distinction from that in terms of a deep penetration, acting independently of the army and the navy—the airmen came to call that strategic. It was a new use of the word strategic basically. And it's reflected now when we talk of strategic nuclear weapons versus tactical nuclear weapons. It comes out of this doctrine, not out of general notions of what strategy is. This then came out of a very specific notion, the strategy of aiming at the economy or the civil society of the enemy far from the battlefields and independently of what was going on in the battlefield.

There were two ways really that this was conceived as being effective militarily. Douhet and Trenchard very early on emphasized the ideal of civilian morale, of either the civilian economy or, earlier than that, breaking civilian morale. In the American air force a different form of the doctrine took hold, and considerably also in the British, which was that you would aim quite precisely at industrial targets that were civilian but had a direct bearing on the fighting of war by the other side. Aircraft factories—less by the way

military targets early on, the idea was industrial targets far behind the lines and specific factories. The Americans in particular believed that their Norden bombsight permitted them to bomb extremely accurately—pickle barrel bombing it was called. They would practice in fact in their maneuvers not just to hit a particular industrial complex, but a particular corner of a particular building would be their aiming point. And they believed they could land these bombs on the average with what we would now call a CEP (a circular error probability), a miss distance, of a few hundred yards at most, which is pretty far for the bombs of those days. A bomb a hundred yards away would not necessarily do any damage to what you were aiming at. But that meant that some of your bombs and a fair number would get right on the target, even though some would miss.

And they drew in particular on another premise of Douhet's, which was that the bomber would essentially always get through. You could ignore the defenses of the other side. There was really no defense against bombers. Stanley Baldwin, Prime Minister of England, said in '32—warned the British public of what they might be facing in a new war, "The bomber will always get through." So there was a notion then that a rather small number of bombs landed quite precisely either on factories—which would of course kill some civilians necessarily by the bombs that missed, the workers in the factory, or by directly hitting civilians—would to be sure violate earlier principles of warfare and the laws that their own countries were signing at that time.

But the moral basis of that was very clear in the minds of these people. Better to kill a few civilians and get the war over with quickly than to observe scrupulously and

meticulously this distinction between civilians and military and doom yourself to a World War I type war where millions and millions and millions of armed civilians—draftees who had just come from civilian life—should be targeted in the trenches. In other words, it was their ethical theory that this was a humane and indeed the only moral way as they saw it to carry on a war.

As I say, there is often for most people this self-serving aspect of the ethic that they endorsed. The moral way to fight a war is our way, my way, the way that gives my service a central role, the way in fact that creates my service and gives me promotions and gives me the bombers that I want. That can be seen from the outside, but subjectively and no more than for other people, their experience was, we are seeing clearly to the reality of modern war and by letting the people on the home front have it—the people who support the war, the people who make the war materiel of the aggressor nation—we'll get the war over with quickly and we'll minimize even their casualties as well as our own. And incidentally, and this got increasingly larger... and we will save a lot of our own soldiers. Better a few of their civilians than a lot of our soldiers. And secondarily better a few of their civilians than even a lot of their soldiers. So it's moral from any point of view as they saw it.

This was based on the assumption that the bombing would be effective and would be effective quickly with relatively small amounts of bombs. And that depended on a whole lot of technical calculations such as the ability to get the bombs onto target through enemy anti-aircraft guns, enemy fighters, that it would be possible to find the targets

precisely, launch those bombs very precisely and so forth. All these things were tested in WW II and proven false.

For the first couple of years of the war, as both the British and the Americans—the Americans didn't come into the European Theater until 1943—but in '40 and '41 and '42 the British were bombing fairly heavily as a major part of their war effort. In fact after their troops were forced off the continent at Dunkirk, it was the only offensive effort they could take. The pressure on them to mount a bombing campaign was very great in part for political reasons. There was a strong feeling in the world that Britain had had it—that Hitler was bound to win the war, especially at the time of early victories in Russia in 1941, and it was very important to the British to show the American allies, or potential allies in 1940, that they were making a strong effort, that they were capable of taking offensive measures—that they were an ally worth supporting. And Bomber Command offered itself as the only command that really could do that—that could get into Europe. The troops no more could do it.

Bomber Command on the whole believed the Trenchard doctrine, the Douhet doctrine, that you should strike at the morale or at the civilian population in general. So this agreement that Britain made on September 1st that they would not bomb civilian population was quite a restriction on what Bomber Command had really prepared itself to do in terms of producing heavy bombers. Hitler at the same time, as I say, had not bought this doctrine, had not prepared for it and had no four-engine bombers—heavy bombers of the kind that Britain had been designing and America had been designing

since the '30s. Germany had not gone in for those. In fact, It's an interesting question why these two nations did buy this belief in bombing and nobody else did. I've never seen much of an elaborate discussion of that analytically but I've thought about it a lot and some things do come out. For one thing, not being continental powers, these being island powers in a sense in effect—Britain and America with large, strong navies, these were the only two countries involved in which the army was not the predominant form of the armed force in particular. And it's not accidental that these are the two countries where the airmen managed to get out from under the thumb of the army and have their own independent operation. In Germany, in France, in Russia, the predominant army officers and the political leadership looked at these doctrines and said, "Nonsense, civilians won't collapse that easily, it's too expensive, you won't get much effect. The way to use airplanes is in close support of troops, close support of tanks."

In retrospect they were right, looking back at the effects in WW II for nearly all. But from the point of view of the Air Force, they were perceivable as simply being self-serving, as not allowing the Air Force to compete with them in budget terms. In any case, it was only Britain and America that had really prepared itself in the way of designing heavy bombers for long-range heavy bombardment. And this started well before Hitler came to power. It was not a response to Hitler's program. And Hitler in fact didn't have this program. When Hitler hit cities early in the war, after September 1st, starting with Warsaw and then Rotterdam and Belgrade...

Are you suggesting a break at this point? OK, I'll just close the onset of the war and I think you'll find the account of how things went after this enlightening.

On May 10th... Well, first, I'm sorry, I started to say, Hitler did in fact hit Warsaw, although his planes targeted rather carefully military targets in Warsaw. But for political effect he emphasized to the world his willingness to hit cities. He used short-range and medium-range bombers for that. His troops had surrounded Warsaw. It was in effect an old-fashioned siege operation but this time carried on from the air. The British quickly perceived it as that. That wasn't their style of strategic bombing, but it did begin to lay the groundwork to release themselves and as they said to allow them eventually to "take the gloves off." That was the phrase in the British—to allow them to use the bombers the way they wanted to do it.

Hitting places like Warsaw was the way the British thought you ought to conduct war and it was the way they prepared themselves to do it, but they were still recognizing this promise to FDR at that point and to the world and to world law not to do that. Within the next couple of weeks actually the Germans bombed Rotterdam. [I'll finish this part in five minutes.] Rotterdam again was under siege. An exception to the destruction, by the way, of civilians that had grown up in the last couple of hundred years was that cities under siege that did not surrender—cities that defended themselves—could be put to the sack in effect, or could be bombarded by artillery as an example to others and to make them surrender. That was an exception—like blockade—to the direct

attack on civilians. Hitler conceived of what he was doing in that mold, not because he was humanitarian or minded breaking rules—quite the contrary, he prided himself on breaking rules, but he did not want to break this rule. He did not want to start strategic bombardment. He understood the British were preparing for it. He understood he was quite vulnerable to that—his cities were. He didn't want German civilians to be tested by that kind of bombardment. So it was his intent (he actually signed an order in the battle for France and later before the Blitz in the preparations for attacking London) that no attacks on cities should be made unless with his express permission. That was to be under his total control. On the whole that was to be avoided.

Indeed for the first nine months of the war (despite Warsaw and Rotterdam) this was observed on both sides because both sides felt it was worthwhile to avoid the reprisals. Hitler in particular was very conscious of that. In the Rotterdam case they had invested it, the garrison was refusing to (in Holland this was), was refusing to surrender and the ground commander called for a bombing strike. After the order had been sent to a flight of medium bombers to go into Rotterdam, the ground commander, General Schmidt, decided that negotiations were proceeding adequately. In fact the garrison was on the verge of surrender. So he very urgently sent word that the bombers should be called off. And in fact... but the bombers did not (this is a bit significant for later events), the bombers did not get the information in time. The order didn't get to them in time to call them off. And the ground commander put pink flares around as a warning that they

should go back. A number of the bombers did go back. But 50 of them didn't understand the meaning of these flares and went on and bombed the heart of Rotterdam.

The original word that came out was that 30,000 people had been killed. In fact 980 had been killed. A large number but a thirtieth of what was originally reported. But this created an enormous sensation and Britain immediately announced that they would not be bound by the promise that they had made to FDR at that point. They would take reprisals if necessary. That was still as I say... that was in May. The next day after that the British sent bombers into Germany for the first time on strategic bombing. And the gloves were off.

BREAK

What I'm going to be discussing in this next hour is I think of absolutely critical importance to understanding the risks we are facing today, as I said earlier. It is very little known by Americans. Somehow I got into following this from a fairly young boy and following it in particular when I had access to a lot of files at the Rand Corporation, which worked when I was there particularly for the U.S. Air Force. And I think one of the very best detailed accounts is on your recommended reading and is on file, The Road to Total War: Escalation in World War II by Fritz Sallagar, which is dated 1969 but that's when it was published here as a Rand Report and I remember reading the manuscript for it when I first went to Rand about 10 years earlier than that. He was

working on it and it had a considerable influence on my own understanding of these problems. So I recommend that to you. It has a lot of aspects that I am not going into tonight of the history, in particular a very relevant analysis of how the escalation developed in terms of misunderstandings—failures of commander control like the one at Rotterdam which I mentioned—which led, by the way, to an apology by the German general who had tried to stop the bombing planes from coming in and failed to do so. He apologized to the commander of the garrison later. But nevertheless the perception of that [was] as a deliberate terror attack by Hitler, which in fact it appears not to have been.

It was very crucial in the British public and British officials' notion that this then is the time to pay them back, it is legitimate for us to do so and in fact it is obligatory for us to do so. If he is starting this form of warfare, it's necessary for us to do the same. Actually a matter of days earlier, on May 10th, the day that Hitler invaded France, the city bombing idea was replaced by Winston Churchill, who had always believed in strategic bombing. On that very day planes hit the German town of Freiburg and the Germans denounced that as a violation of the assurance

(CHANGE TAPES)

The first attacks on Berlin came the day after German bombs fell on London. Though the British couldn't know it, as far as we know, although they were reading a lot of communications at that time, Hitler in fact had the strictest orders out that there must be

no bombs falling on London at that point. He was reserving that as a possibility later on, but he was trying to avoid reprisal. And he failed to do that because some plane on their way to oil refineries on the Thames found themselves over London on August 24, 1940, which led to attacks by Churchill on Berlin on August 25th, the next day, and then the next day, and six attacks actually within the next ten days. After about the fifth of those, Hitler was saying, "We will pay back a hundredfold if you continue this. If you do not stop this bombing, we will hit London." Something he was, as the British emphasized in their own accounts, they knew he was very reluctant to do. Churchill kept the attacks up in fact and within a couple of weeks of that first attack on September 7th the first blitz started—the attacks on London. That actually was a response by Hitler to British attacks on Berlin. The British attacks were on what they believed to be a German deliberate attack on London, which in fact was not, it was a misunderstanding of an attack.

And a major point that emerges from this with great relevance I think to nuclear operations is there is a great deal to be learned about the possibility of sending signals with nuclear weapons—sending signals even with high explosive weapons with their much less destructiveness—turns out to be a very, very ambiguous and chancy and dangerous process. And the idea of keeping a war limited—I think it is very hard to read this book which is addressed to this question and come out with any sense that a nuclear war could really be kept limited with any reliability. But that's not the point that I'm emphasizing here tonight.

The reason of course that these errors of perception led to such immediate escalations as we now call them was that there were major factors of the British that had been preparing for such operations and believed they were the right way to fight a war from the beginning. ~~But~~ but at this stage, the dominant part of the British Air Staff and even the Bomber Command still believed in what we could call the American doctrine, associated by the way with Billy Mitchell, an American general who pushed the strategic bombing, that industries were the things that you were trying to hit, not people per se. The trouble was that they had already found, even early in 1940 in their earliest operations, they had discovered conclusively that Douhet's notion that the bomber will get through and that you can afford to ignore defenses was wrong. They were losing so many planes to daylight raids that they had to go to night bombing.

Early on the Germans had very little capability for night interceptors. Their planes didn't have radar on them for this kind of thing so ~~their~~ British planes were fairly safe at night. The trouble was that moving to night bombing they rather quickly discovered not only could they not hit or discover a factory in night bombing, they had great difficulty finding a small or medium sized town. Their navigation capability even on bright moonlit nights proved to be much less reliable than they had ever imagined. ~~By the way~~, it ~~took them... they discovered quite quickly that they had to go to night~~ bombing. It took them a couple of years really to discover what that meant to the accuracy of their bombing.

There were two problems. One was getting even in the general area of the target they were aiming at. That was a navigation problem. It proved to be extremely difficult. Even late in the war there were times when the British would raid, let's say Essen and the Germans the next day would announce attacks on about seventeen cities in Germany which had in fact been hit by this or that plane which had announced itself, had reported itself as having hit Essen. Navigation errors, especially early in the war, proved to be enormously great. That did improve later with new navigational methods later on in the war, but the second point never really did improve. That was, even if you found the right town—and you couldn't find anything much less than a good-sized town at night—the idea of hitting something within that town, a particular part of the target, either finding it or managing to drop your bombs on it in the face of flak, in the face of having to take evasive action from flak and fighters and whatnot, was just impossible. Instead of hundreds of yards of aiming error which had been the foundation of the notion of strategic bombing, they finally discovered when they finally did adequate photo reconnaissance (which was really not until a couple of years into the war) that no more than one third of their planes were getting within five miles of the target and dropping their bombs.

In fact there is a—I don't think I brought it with me, but Freeman Dyson, an American physicist who at that time was a young man working on operations analysis for the British Air Force, describes one of the early accounts of photo reconnaissance which showed photographs of where the bomb damage actually was in relation to the target.

And they had made a three-mile circle on the map around the factory which had been the target. And he recalls somebody saying, "You know, there aren't too many bombs within that circle, maybe you'd better use a five-mile circle." Now with high explosive, remember, let's say a 750-pound, something like that, as I said, hitting a hundred yards away has essentially no effect on the target. So hitting a mile, three miles, five miles, which by the way with a nuclear warhead will destroy the target in most cases and people at the target wouldn't even be aware that they were under attack. And as I say it took a long time to discover this because early on they depended on the reports of airmen who in those days as in this reported that they were annihilating this, that factory, they had just destroyed a particular wing of the factory, they had done this and that, and it wasn't until separate missions were sent with Spitfires for separate reconnaissance by photo—well into the war—that analyses showed that they weren't hitting anything they were aiming at. Nothing they were aiming at was getting hit.

That moved them, then, finally in recognition of this to a doctrine in the summer of 1941 (this is still before the U.S. is in the war), at a time when they really wanted very much to keep bombing at it although it didn't seem to be accomplishing anything, they moved to a different kind of target. Instead of worrying about whether they should hit oil or ball bearings, or this factory or that factory, the kind of debate that continued throughout the war, they moved to transportation targets.

Now transportation was in the class of targets they had always conceived as of great importance from the earliest days of thinking about bombing—railroad yards and

whatnot. The reason they moved at this particular time to transportation as the target was that transportation—railheads, marshalling yards and junction points for trains—are in the middle of cities. And if you took that as a target you would not hit it but you would hit something. The bombs would not land in a field, as most of them did actually, or nowhere. You would get what they called a "bonus."

Now of course there were those who felt that people were your true targets anyway. They were the people who were going to sue for surrender, they were the people who did the war work. But that was a minority faction at that time within the RAF. The majority, according to Sallagar, here it says "who opposed making war on civilians," in turn found a way of reconciling their moral scruples with a desire for retaliation, which they did share, by recommending that air attacks be directed at military or economic objectives in a city without bombing "the city itself." There was no reason to believe that this could be done at night or that it would be done at night—you couldn't hit the objective at night—or that it would keep down the number of civilian casualties, and there was much evidence to the contrary.

But the proponents of this solution either minimized the inevitable civilian casualties or actually welcomed them, provided they were a byproduct of the bombing and not its main objective. And he says, here is an official account in the Air Offensive book of the British. If there was to be any strategic bombing at all, civilians would be killed—hospitals, churches and cultural monuments would be hit. The Air Staff, as represented by its Vice-Chief, Sir Richard Peirse, believed that what was inevitable was

also desirable, but only insofar as it remained a byproduct of the primary intention to hit a military target in the sense of a power station, a marshalling yard or an oil plant. It was all right or even good to do it, but only if you didn't intend to hit those people but you were aiming and intending only to hit the power plant. Some of you may be Catholic theologians in the house and the majority of you will recognize the notion of primary and secondary intent and centuries of theology and scholasticism that have gone into this kind of Jesuitry as to what intentions are evil, and anyway it was very much reflected in this.

Bomber Command, as represented by its Commanding-in-Chief, Sir Charles Portal, now in September '40 believed that this byproduct should become the end product. This is who you should aim at—the people. He believed this had been justified by previous German action and would be justified by success—by the strategy in the outcome. There's a footnote saying, "A few weeks after the time to which this passage refers, they switched places; Portal became Chief of the Air Staff and Sir Richard Peirse took his place as Commanding-in-Chief, Bomber Command. After the switch, each man began to swing around to the views he had opposed in his former capacity." There is a theory of ethics and politics and whatnot in the Pentagon (which I used to hear all the time in the Pentagon) which is, where you stand depends on where you sit. Your stand on a position—the position you take—depends on who's paying you—which office you're sitting in basically. And if you switch from the Army to the Navy, feelings as to what was criminal and murderous, and moral and necessary on the other hand, shifted quite dramatically suddenly, Quite sincerely, that's life.

In any case, they shifted at this point to the transportation yards with the notion that the civilians would be hit as adjunct, as what we would now call collateral damage—unintended but acceptable casualties. Acceptable as long as you weren't aiming at them. There was still the majority notion that to aim at civilians directly was criminal—was murder. And that remained (those of you who have done the required reading will see) a very strong belief in the U.S. Army Air Force until quite late in the war. Although the Casablanca Agreement in '43 agreed that the British would do night bombing and the Americans would do daylight precision bombing as a joint coordinated operation, the Americans in fact regarded what the British were doing as mass murder. As their allies. And they remained in fact quite strongly condemning of them in their own minds, in their own belief that [with] their Norden bombsight, their high-flying bombers were capable in daylight of doing what the British had tried and failed to do early in the war. The British were quite skeptical of this, and after awhile the Americans eventually did their photo reconnaissance and discovered the British were right. They weren't hitting what they were aiming at. Same as RAF. Moreover, behind burning, through clouds.

But you notice that the emphasis here in terms of the targeting did have its effect on the targeting. It wasn't just a cover. And he quotes here a new point where the directive now began increasingly to switch in late '41 to objectives in large towns, with the primary aim of causing very heavy material destruction. It instructed Bomber Command to employ a high proportion of incendiaries and to focus their attacks to a large extent on the fires with a view to preventing the firefighting services from dealing

Doubt

with them and giving the fires every opportunity to spread, according to the official history of the British. "Thus the fiction that the bombers were attacking military objectives was officially abandoned." This was the technique which was to become known as area bombing, and Sallagar comments, "This interpretation is wrong on an important point. It did outline a procedure which in effect amounted to area bombing. But the fiction that the purpose was to hit specific objectives in the cities was not abandoned, officially or otherwise, until much later. The official communiqués reported bombing results in terms of the specific objectives allegedly destroyed or damaged. Civilian damage inflicted in the course of these attacks continued to be regarded as an incidental, though not unwelcome, byproduct of the bombing."

In short, the rationale behind the bombing offensive was still based on the fiction that it was possible to single out specific objectives in a city at night, and that there was a difference between inflicting civilian casualties as a byproduct and doing so as the end product of strategic bombing.

Somebody came up during the break and said how can I say that this remained a secret when after all John Ford, who wrote the Catholic analysis of this ~~(which~~ is ~~assigned~~ reading), was describing the bombing quite accurately as area bombing and city bombing and condemning it? The fact is that till the end of the war and till this day, people who lived at that time will recall being told, as they were told many times, that in the terms described here, the targets, the aiming points, continue to be with as great precision as we can muster under attack—I mean if they are attacking us they will have to

pay the penalty of our inaccuracy—but as accurately as we can, we are bombing oil reserves, ports, specific factories related to the war.

Many accounts have come out, some from bishops in occupied territory or in Germany, unimpeachable reports that many civilians were dying. And of course Goebbels (who could be discounted—the propaganda minister) was putting out in enormous detail, often, the effect of what Germans called terror raids. But Ford's interpretation, which we'll see was correct, was not believed and understood by most American people because it was consistently denied by British and American authorities who were unquestioningly believed.

To the end of the war, the American authorities on every occasion and the British on every occasion in Parliament and Congress and elsewhere gave the terms that I've just described. Yes, of course, people are being killed in warfare. That is the nature of war. It has always happened. Indeed, much as it is deplorable, it is unhappy that these people are being killed, the fact is the Germans did start this type of operation. They are fighting an aggressive war. They started it and they are getting back what they have given to us. Of course the people who ~~are~~ were being killed ~~are~~ were not the ones who gave it to us. The fact that the Germans were not exactly in democratic control of their country's policy was glossed over pretty fast. But they were seen as having been supportive of Hitler's policy, and that was true. So they had deserved this regrettable, minimizable, but inevitable punishment that they were getting.

This is not what came to be the reality, as I'm about to say here, although as late as this stage in the war the people at the top were still fooling themselves as to what they were actually doing and why they were doing it. But there came a time when the pretense stopped. The modern era in a very important sense—the era of our jeopardy, the era that puts us on the target of a ~~Russian~~ missile right now somewhere—started on February 14th, 1942. City bombing did not start then, as I've made clear, but city bombing as the principal way of fighting a war for a major industrial power, which was not Hitler's conception or practice—the Blitz in that regard was an aberration for Hitler which he didn't repeat particularly—as a way of fighting a war by deliberate choice of the nation's leaders, can be said I think to have started at that time on February 14, 1942 with a directive I am about to read.

The kinds of questions that were being raised by John Ford and others, some other American and British pacifists or theologians, in a way bore on the question that Senator Baker asked so often during Watergate: What did the President (or the Prime Minister) know and when did he know it? What was the issue of intention? As I say, practice preceded intention but a change in intention did make quite a difference. It was possible to kill more people than either the Germans or the British had yet succeeded in doing by 1941. And the authorization to proceed to do that was given on February 14th. The directive was this: The key sentence:

> [This was an Air Staff directive later confirmed by the Chiefs of Staff and the Defense Committee, the civilians]

TO THE BOMBER COMMAND:

> The primary object of your operations should now be focused on the morale of the enemy's civil population, and in particular of the industrial workers. With this aim in view, a list of selected area targets is attached.

The primary targets listed were four important cities in the Ruhr-Rhineland area, and this in a way started the practice of naming cities as targets. Not plants, not blocks, not this and that, but cities as targets. Of course high explosive couldn't destroy a whole city in those days. It took hundreds of planes, many returns to do it. Nuclear weapons of course allowed you to destroy whole cities, and when nuclear weapons plans began to be written they were written only with cities as targets. But that practice really started with this directive.

There could be little question that the intent was to launch a concentrated air offensive against German cities. For example, the appendix contained an additional list of industrial objectives, not area targets, against which precision attacks could be launched if conditions were especially favorable, and identified the principal industries associated with each of the cities to be attacked. The reason for this is not clear. It may have been merely to permit the interpretation the cities were to be attacked because they contained military objectives. When Truman announced later the destruction of Hiroshima—actually it was after Nagasaki—he mentioned, "History will note that we have selected for this attack Hiroshima, a military target." But the Chief of the Air Staff wanted no misunderstanding on whether the air offensive was to be directed against cities or against specific objectives. The specific objectives were mentioned, but he didn't

want there to be a confusion as to what the target was to be. He penciled an explanatory note for the guidance of the new Chief of Bomber Command, Harris, Bomber Harris, who was to take command the following week. "Ref. the new bombing directive. I suppose it is clear that the aiming points are to be the built-up areas, not, for instance, the dockyards or aircraft factories where these are mentioned in Appendix A. This must be made clear if it is not already understood." There was little danger, says Sallagar, that Air Marshal Harris would misread the intent of the directive, for it accorded with his own preference. He had believed for years that the notion of hitting a particular industry was not only infeasible but would not have the effect described, that the only thing that they could hit was large areas and this was the way to fight the war—to destroy as large a part of as many cities as possible and as many. The word "people" was not mentioned particularly, actually housing was mentioned a good deal—but to destroy the city, that was his objective.

Webster and Franklin refer to February 14th '42 when this directive was issued as "a pregnant date in Germany." I've skipped ahead here. "A pregnant date in history." It was indeed, for it ushered in an onslaught on Germany that made the Luftwaffe attacks on London seem puny by comparison. For every ton of bombs dropped on England in the Blitz in the nine months, England and America, mainly England, dropped a hundred tons of bombs on German cities eventually. About ~~half a~~ 600 million Germans—civilians—were killed, perhaps a million I'm told in Germany. For the first time, a bombing directive had singled out civilian morale, that is housing, the parts of cities where

civilians were, as the primary objective. Except for inevitable diversions, it was to remain the primary

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objective for bombing command for the remaining years of the war. The largest part of the tonnage of the British through the rest of the war was directed at these cities, although this continued to be denied every year of the war.

Early on in this course of trying to attack cities at night, they discovered that high explosive did not get the effects that they wanted, even when they were targeting housing. First of all, they chose the built-up portions of workers' housing on the grounds that these houses were closer together so that the bonus damage would be greatest—a bomb missing one place would hit another house. It wouldn't fall in the yards that separated houses in middle class or upper class housing in suburbs. Houses were closer together and the fire would spread faster that way.

They also began to discover that fire was the way to destroy the city, not high explosive. In fact, the high explosive came to serve largely the purpose of discouraging the firefighters from going after the incendiary bombs when they first hit the ground at a point when technically it was rather easy to smother them with sand. They were using by

this time magnesium thermite bombs in particular that couldn't be put out with water. You had to smother them with sand. Water would just spread them around or cause them to explode in effect.

I remember as a kid in school (I was 10 when the war started) helping to fill the buckets with sand that were in every classroom. And we were shown movies of German attacks on London and the effects of a small thermite bomb. And I will never forget this sight. It had a very uncanny effect on me when I was, say, 11, 12, the idea that someone would design a bomb that could not be put out with water and which when it spattered you with this magnesium like white phosphorus or like, for that matter, napalm, will burn through to the bone, so the white bones would show in some of these pictures, which was heavy stuff as you can imagine for a 12-year-old to look at. And of course, bomb wounds in general. They look like the bomb—the burn wounds, they look like the burn wounds from Hiroshima. They are the same as the burn wounds from Hiroshima. The idea, though, of designing a bomb that would burn civilian housing—obviously it wasn't meant against a tank or a factory particularly—seemed eerily brutal and it defined the enemy for me, as it did for other young and old Americans. The enemy... This was from the Battle of the Blitz.

In Hamburg finally in 1943 a theory was tested or finally succeeded that had been thought of some time before, which was that the way really to destroy large parts of cities, which is what you are now trying to do, was to harness the forces of nature by appropriately designed technology and tactics. Specifically it was hoped that you could

create a firestorm, a kind of fire that would change the weather in its local area. If a fire, they discovered, was... if enough fires were started sufficiently widespread in a city, there would be a number of effects. First of all, the firefighting capabilities of the city could be swamped. If instead of sending planes in a few at a time, which was normal, you sent them in in a mass, and if you did patterned bombing with incendiaries (in that time mainly magnesium thermite bombs which we were using), you got a lot of little fires started. The fire departments, which were getting increasingly important and big in both Japan (later in Japan) and in Germany, would be unable to deal with these small fires. They'd deal with one but they couldn't deal with one over here and the fires would begin to spread and join each other till they became a kind of mass fire, till the city became like a grass fire.

As this happened, heated air from this would rise very rapidly and create a low pressure area which would begin to bring in winds from the outside area. In effect you would create your own draft, you would change the wind patterns in the area. And the air coming in then would feed this fire like a blower on a hearth and turn the city into a furnace. That was the theory. Tried many times and succeeded finally in Hamburg in 1943, proving that when you did this you could get temperatures up to 1,400 degrees Fahrenheit and everyone would die in the area within this circle that the winds were coming into from all areas. Essentially the people outside that area would be safe because the fire wouldn't spread. The winds were coming in this way and going up. A very strong updraft. Everyone would die, either of asphyxiation by the oxygen being

burned up if they were in shelters, or by heat. Cement could melt at this level. Asphalt would melt and the firefighters would bog down, their equipment would bog down on the street and they couldn't move. The radiant heat itself without the flame showing would be so intense that it would cross fire breaks, cross streets, and would spread the fire within this zone of death.

(FYI slight copy edit from this point on)

Hamburg is very often described as a firestorm. But I must say, having studied this for years, it had never come through to me whether anyone had intended this effect. And Dyson's book, which is called I think Interfering with the Universe, was the first one that related to me how deliberate that had been. He describes a later firestorm over Dresden just a couple of months before the end of the war in 1945.

Dresden was a city that had not previously been hit because it had nothing that could remotely be called a military target. It was a university town, a historic town, and at that particular time was filled with refugees who were fleeing the Russian armies who were coming into Germany. So it had an unknown number of people in every house in Dresden, filling the public buildings, the houses. It was crammed with refugees. The firestorm that was created in Dresden, as at Hamburg, killed so many people who would be reduced often to puppet-like size by the heat or to just layers of ash basically, were killed so thoroughly that there was not a sense of what was in there. It's still not known

mock tsunami Tokyo—1923

how many were killed in Dresden. The estimates range from 25,000 (which is known to be too low—those are known residents of the city) to half a million possibly. People being killed. With a quarter of a million being a rather standard estimate or 100,000 to 140,000 being another common estimate of the number of people who died in Dresden.

Dyson's comment in his book was that from the RAF he knew that they had been trying and working on the tactics of producing a firestorm throughout the war. The Dresden firestorm was the worst, but from our point of view it was only a fluke. We attacked Berlin 16 times with the kind of force that attacked Dresden once. We were trying every time to raise a firestorm. There was nothing special about Dresden except that for once everything worked as we intended. It was like a hole-in-one in a game of golf. Unfortunately Dresden had little military significance and anyway the slaughter came too late to have any serious effect on the war.

How many people have read Slaughterhouse-Five? People now say it's a quite accurate account of the attack on Dresden, which Vonnegut experienced as a prisoner of war in a slaughterhouse where he was staying which saved his life. He was deep in this slaughterhouse, as you remember from the book, and came up to find people shrunk to the size of gingerbread cookies, and spent the next some weeks helping to shovel bodies away from this.

I was talking to Vonnegut once and he remarked that when he came back from Europe at the end of the war with a friend of his who is mentioned in Slaughterhouse-Five as his old war buddy (and has been mentioned in some of his other books), they

were approaching on their troop ship the Statue of Liberty coming into New York harbor and he turned to his friend and said, "Well, what did you learn from all that?" And he said the friend said to him, "Never to trust anything my government tells me again, ever." And I said to Vonnegut, "What was he referring to exactly?" And he said, "He was referring to Dresden." He said, "We had been told all during the war about the Norden bombsight and our precision and how careful we were and so forth." Dresden by the way was mainly a British attack but the Americans came on the second day and as they said made the bubble bounce—took part in it. And he said that they came up from their slaughterhouse in Dresden and looked around at the city and suddenly discovered that their government had been lying to them for some time.

Well actually, the Americans hadn't been wholly lying. There is a book on your recommended reading about the American policy during that period. And for a long time, as I say, they regarded this kind of bombing, which was the British kind, as murder. But by the time of Dresden, which was in the spring of 1945, the Americans too had discovered that they weren't hitting what they thought they were. And second, even the attempt to hit in daylight was causing enormous and still famous massacres in the air of WW I type. We were losing our planes. The Schweinfurt raid, the Remagen raid... I've met people actually who were in one of those who can still shudder actually at the thought of what they went through in the air on those raids, which meant that the American air force turned to night bombing too. And in due course they discovered what the British had discovered three or four years earlier—you can't hit anything at night

except large areas. And so by the spring of 1945 the American air force had not completely turned to area bombing but had largely adopted it along with the British. By this time, much greater precision was possible, especially because the German defenses were much lower by that time, but even so they had gradually adopted these tactics.

As I've indicated, the technique then of using American or British technology to affect weather and produce an annihilation by the use of fire was something that had enlisted the best brains of their generation—physicists, engineers, economists, economists came in as experts, Walt Rostow for example, experts in how an economy could be destroyed). But this changed gradually to how to destroy society, a population. And so the operations analysts had been working on questions of what the mix should be of explosives versus incendiaries, what kind of incendiaries and so forth.

Enter Curtis LeMay into history, who discovered rather soon on taking over 20th Bomber Command in Japan that the precision bombing with B-29s by his predecessor Hansell, who had been one of the developers of precision bombing theory, and who remained attached to it, and who could not with good effort carry out orders he was beginning to get to burn the cities of Japan—when LeMay came in, he rather quickly discovered that they simply were not managing to hit the steelworks and the bridges that they were trying to hit in Japan. Here was this effort that had been built up for a matter of years that reflected a generation of belief and dedicated work. And Billy Mitchell, as you may remember, had gotten himself court martialed in the vehemence of his zealous advocacy of this type of bombing and had to retire and is regarded as a hero, reasonably

enough, within the Air Force for this dedication to this approach. This enormous investment had been made and by this time in the war it had not proved itself at all. Not much had been accomplished. Other uses of air power in the war had been quite spectacularly helpful to the ground operations. This had killed a lot of people and had very little to show for it.

LeMay decided about the same time that Dresden was being hit by the Americans and British in Europe and also the large raid over Berlin managed to kill 25,000 people in one night—about that time, LeMay was reconsidering the bombing strategy in Japan. He was a very brave man physically. He had pioneered tactics among other things of forcing the people flying under his command to fly in tight formation and to bomb on formation with no evasive action under flak. He would fly in the lead plane, he would drop the bombs, everybody was to drop their bombs when he dropped them without any initiative. And the idea was to fly straight through the flak without any evasive action and thereby to do the job. Hit the target. And he was famous for this willingness to do this.

As he approached a projected raid over Tokyo the night of March 9th- 10th in 1945, he wanted very much to fly the lead plane, for reasons that I will describe, but was not allowed to do so because he knew an operation with the military code name "Firecracker." He knew that he was to be the one in charge of dropping atom bombs—whatever they were—on Hiroshima and Nagasaki, which came to be excluded from the list of cities he was bombing so as to have cities that would allow a full demonstration of

the lethality of the atom bombs. So four cities were taken off the list of cities he came to be bombing.

LeMay will come back a good deal in the course because LeMay, who later was in charge of the atom bombs, then was given the chance of examining the relation of nuclear weapons to the Air Force, developed the first nuclear weapons plans for the Air Force, then got the job of taking over the Strategic Air Command and he made the Strategic Air Command into the most efficient military organization probably in history, or certainly in modern history. The plans for nuclear weapons that are still being used strongly reflect the LeMay era.

His book called Mission with LeMay is in the form of a stream of consciousness. It is done with MacKinlay Kantor, who is a novelist, but apparently on the basis of endless tapes here. It's a very long book, about 600 pages, all in the first person by LeMay. It gives you the feeling now of where we had come to from September 1st, 1939, when the Americans urged everybody not to hit cities, not to hit people. He goes at some length at the tactical considerations that went into what came to be known as the most daring gamble by an American commander during the war, or certainly by an air commander, and made his reputation for "courage." The courage was in innovating and in taking a chance of a significant failure. I'll paraphrase this. He goes in the steam of consciousness of how he came to think of it, but the essence of it was that he concluded (among other things from looking at photo reconnaissance) that the Japanese did not have much low-altitude flak—that is, anti-aircraft fire—as the Germans did have, so that by

going in at low altitude you could achieve a number of benefits and perhaps you would not lose a lot of planes. If he were wrong—if they turned out to have anti-aircraft that had not yet been spotted—he was afraid he could lose a lot of planes and he said it would go down in history as LeMay's great blunder and we would lose a lot of planes.

The instructions given to the planes, then, were unique in the history of bombing up till that time. These enormous B-29s were designed to fly at very high altitude, very fast, and in a bomber stream high up so as to deal with fighters (of which there weren't very many in Japan at that point, and none at night to speak of), and to deal with the fighters, they could fight them off by using their guns against the fighters. You'd lose fewer planes that way. The tactics he prescribed that night, the bombers had never heard of before. They were not to convoy. They were not to go up to high altitude. They were not to rally around, to circle around until others got in place for this enormous stream that was to go over the city. Instead they would crisscross the city essentially from their bases by the most direct route, going back and forth across the city. They would not go up to high altitude. They would not convoy and go into the circles. Therefore they would save a great deal of fuel. This fuel would go into extra bombs. Most dramatically they were to strip the planes of their guns and ammunition, which saved another ton and a half for bombs. And by these tactics he counted on increasing the bomb load of his 334 planes by three times. He tripled it so they went in with six to eight tons of bombs at a very long distance.

These instructions were very frightening to the bomber pilots when they heard them. Incredible. Going in at low altitude, going in without guns, naked of guns essentially; they had never heard anything like this. So this was the sense in which this radical departure could have had a very big effect. He also thought about what the armament should be, which was rather critical. In stream of consciousness he says,

> Let's see, we could load them with E-46 clusters, drop them to explode at about 2,000 feet, say at 2,500. Then each of those would release 38 of the M-69 incendiary bombs. Wouldn't have to employ all the same type of incendiaries, of course, we could use both napalm and phosphorus. Those napalm M-47s. They say 90 percent of the structures in Tokyo are built of wood. That's what Intelligence tells us and what the guide books say, and National Geographic and things like that. They all say the same. Very flimsy construction. Bringing those night B-29s all the way down from 30,000 to 9 or 5 thousand feet. A lot of people will tell me flesh and blood can't stand it. Maybe they'll be right, maybe flesh and blood can't. I think it was Velman, maybe it was Floyd, Lloyd who had that toy village, well maybe some other kid in the neighborhood really owned it but it was one of those villages you set up. [This is his memories.] The houses come all flat but they are hinged at the corners and you spread them out and shove the roof down with eaves going up through the slots and so on and thence your house sits like a strawberry box. Well I remember they had the village all set up in the back yard when I was a kid. And some mean kid says, "Let's see if we can burn it down." So we set fire to the first house, and brother, they all went. All right, by God, if I do it I won't say a thing to General Arnold in advance.

To spare Arnold the responsibility, no word was given to headquarters in Washington as to the tactics he had in mind until just hours before they left—too late to do anything.

> Why should I? He's on the hook in order to get some results out of the B-29s. But if I set up this deal and Arnold OKs it he would have to assume some of the responsibility. If I don't tell him and it's a failure and I don't produce any results then he can fire me and he can put another commander in here and still have a chance to make something out the 29s.

Which ~~meant, you know,~~ his dedication here. The key thing was to prove that the 29s could do a big job and keep strategic bombing in the war, keep strategic bombing after the war, which was the critical purpose by this time.

> This is the way I'll do it, not say one word to General Arnold. No bomb bay tanks either. Nothing but bombs in those bomb bays. No gas tanks. We won't need all that extra gas if we're not going to altitude. How do I get that way saying 'we.' I can't go on this mission if we run it. A man came and talked to me and I know something about a firecracker so I can't go. Tommy Powers all in favor of this low-level incendiary attack. If we run it I'll let him lead.

Tommy Power became head of SAC after LeMay. I interviewed Thomas Power on the day that he retired for the Kennedy oral live history.

> If we send some veterans in ahead they are bound to get on the target. They are bound to start the fires. If we really get a conflagration going the ones that come in later can see the glow, they can drop on that. LeMay, what's the weather report for today. LeMay, how many airplanes have we got in commission today? If we go in low at night singly I think we'll surprise them. I reckon one aircraft can burn up about 16 acres of territory. Plenty of strategic targets right in the primary area I'm considering. All the people living around that Hatori factory where they make shell fuses. That's the way they disperse their industry. Little kids working out. Working all day. Little bits of kids. I wonder if they still wear kimonos like the girls used to do in Columbus in those Epworth League intertainments when they pretended to be geisha girls with knitting needles and their grandmother's old comb stuck in their hair...
>
> Need at least 300 over that target to do the kind of job that should be done. I wish to God we could send 500 B-29s instead. Ninety percent of the structures made of wood. By golly, I believe Intelligence reports said 95? And what do they call that other kind of cardboard stuff they use? Shoji, that's it....

On the question of how the university graduates were being used at this point. LeMay was kind of a simple person when he was Chief of Staff of the Air Force. I was working with the Air Staff a lot and they would tell me that they would bring a paper in to him and it was very common for him to say, "Simple this for me." It was a phrase of his. I once referred to him as one of history's terrible simplifiers, a phrase that was first used about Hitler. But LeMay didn't invent this approach. He was using an approach that had been developed for him.

City burning in this book (it's a good book that just came out by Kennet—it should have been on your list, I forgot about it)—city burning was becoming something of a science. The M-50 thermite incendiary used in Europe had excessive penetration. It would often pass entirely through a Japanese structure and ignite in the earth beneath it, occasionally perforating water mains. The best weapon was the M-69, as he mentions here, a small incendiary bomb, many of which were dropped in a single casing. It was designed to release 38 incendiary bombs made to fall in a random pattern, this arrangement furnishing the basis for the big bombing success to come.

Spaced fall, or the orderly design and distribution from one bomber with an intervalometer setting of spaced fall of one bomb every 50 feet, could burn about 16 acres as each super fort [?Superfortress] had a full bomb load of 16,000 pounds. "The basic procedure," concludes this passage in an Air Force book, "was like throwing many matches on a floor covered with sawdust." Everything combustible would be consumed and the fierce temperatures generated would ensure that by radiant heat alone the

conflagration would cross street and canals. Water sprayed on the fire would simply vaporize. Glass panes would soften and drip from metal window frames. Here and there, incredibly, concrete melted.

He sent the planes in then by themselves, without him that is, though he didn't want to. Drafts, says LeMay, from the Tokyo fires bounced our airplanes into the sky like ping pong balls. A B-29 coming in after the flames were really on the tear would get caught in one of those searing updrafts. The bombers were staggered all the way from 5 to 9 thousand feet, sent up into the air from the draft. But when the fires sent them soaring, they got knocked up to 12 and 15 thousand feet. According to the Tokyo fire chief, says LeMay, the situation was out of control within 30 minutes. It was like an explosive forest fire in dry pine woods. The racing flames engulfed 95 fire engines and killed 125 firemen.

The airmen found the glow of the flames lighting the sky. The clouds, they said, looked like cotton wool dipped in blood 150 miles away. It was a false dawn over Japan. LeMay describes the account of this; he says, "I said early in the book what Power had described, so I won't repeat it. It was the greatest single disaster incurred by any enemy in military history. It was greater than the combined damage of Hiroshima and Nagasaki. There were more casualties than in any other military action in the history of the world." He quotes Power as reporting that and then goes on to say:

> So we had done that from low level just as I thought we could. If it hadn't been for that big river curving through the metropolitan area a lot more of the city would have gone, says Power [this is LeMay]. About one fourth of all the

buildings in Tokyo went up in smoke that night anyway. More than 267,000 buildings. I quoted General Power that line about casualties in Nagasaki and Hiroshima away back at the beginning of the book. No use repeating it now.

Contrary to supposition and cartoons and editorials of our enemies, I do not beam and gloat where human casualties are concerned. I'll just quote Army Air Force WW II Volume 5, page 617, and let it go at that.)) The physical destruction and loss of life at Tokyo exceeded that at Rome or that of any of the great conflagrations of the western world. London 1666, Moscow 1812, Chicago 1871, San Francisco 1906. Only Japan itself had suffered so terrible a disaster. [He italicizes these.] No other air attack of the war, either in Japan or Europe, was so destructive of life and property (the italics are my own).

General Arnold wired me, "Congratulations, this mission shows your crews have the guts for anything." It was a nice telegram but I couldn't sit around preening myself on that. I wanted to get going just as fast as was humanly possible. I saw that if we were to achieve the maximum effect in this attack a second assault against an enemy target should come immediately after the first. It would be possible, I thought, to knock out all of Japan's major industrial cities during the next ten nights. Fourteen planes lost only out of 325 which started the mission. Not much like Regensburg.

And he set out after the next 17 cities in succession. As he had planned, the firefighting was over almost at the beginning. People who stayed in shelters were all asphyxiated. Thanks to the effective mixture of high explosives with the bombs, people stayed away from these little thermite or napalm bombs when they first landed and could have been put out until it was too late. They were afraid because delayed action bombs might go off. They thought they might be explosive bombs which were cleverly made to look just like the incendiary bombs. These were techniques that had been experimented with and had been found to work by our professors and engineers over the preceding years.

So the fires did spread. In this case in Tokyo it was not a firestorm. There was a wind blowing. They called it a red wind, "akakaze," which got to be quite high, about a 28-mile wind. This meant that the fire moved ahead of the wind and developed another kind of conflagration known as a sweep conflagration, a tidal wave of flame which they had always hoped to get before but the wind conditions had to be exactly right. And on this night they were.

This rose hundreds of feet in the air of flame, and spread radiant heat ahead of it that would knock a person out and kill people by inhaling it or just knock them down and burn them just by the heat, the infrared rays ahead of it. It had all the effects I've described on the asphalt and the concrete and so forth. Tokyo is covered with canals sort of like Venice. So others took their children out of the shelters and raced for the canals to get in them away from the heat they were spreading. The canals were all boiling so they boiled to death by tens of thousands the next day. At least 140,000 people were killed, or more than the immediate causes of Hiroshima and Nagasaki put together.

When Truman mentioned in his memoirs that the use of the atom bomb did not present itself to any of the civilians as a moral problem, that seemed odd I think to many readers including myself who read that. You could say it was a difficult moral problem but we had to do it this way. How could it not be a moral problem? And he goes on to say as to Stimson, because we were already killing more people than that by our nonnuclear attacks that were going on."

How many people in this audience, by the way, knew that was the case? How many did not know that? More know it, interestingly, than is usually the case. American people in general did not know that.

But the atom bomb, to link this now to the next lectures, the rest of the course, did not start a new era of targeting or strategy or war-making in the world. The concepts of that started long before. The practice of taking cities as the direct target for attack and even making the attack on civilians the major part of an industrial country's contribution to the war—Britain's in this case—started as I've said in 1942, not in 1945.

By late '44 in Germany, and totally in Japan by March 1945, that had become the American way of war in the air. LeMay was convinced, as were all Air Force people and really the Joint Chiefs, that the bombing along with the blockade had brought the Japanese to the point of surrender—as it had—and that the atom bomb was in no way necessary. And that judgment is not just an Air Force opinion. This was the judgment for instance of the U.S. Strategic Bombing Survey which concluded concerning Japan at the end of the war, probably by November 1st (that is before any invasion) and certainly by December of 1945 Japan would have surrendered without the atom bomb.

And indeed bombing did prove itself in this way in Japan in a way it did not in Germany. Thanks to the lack of air defense by that time in Japan, because the blockade had deprived them of oil, thanks to the flammability of Japanese cities, the bombing did have an effect on the war in Japan (six months before Hiroshima) that it did not have ever in Germany ~~and never was about to have in Germany~~, leaving thus one air force to come

out of the war believing that it had won the war by bombing. A country believes that ~~it~~ we believe it about Germany although it wasn't true in Germany—they believe that the atom bomb was only incidental to that as far as the war. But the atom bomb was fitted into a pattern of war-making that it did not initiate.

The atom bomb was developed by the United States from '39, '40, '42 on with the intent of implementing a strategy that had been devised and accepted by our air force since the '20s. ~~He~~ mentions the earthquake of 1923, the conflagration and earthquake in Tokyo. Billy Mitchell, the father of strategic bombing in this country, had visited Tokyo in 1924 for the Air Staff and had concluded by his study of the conflagration at that time that Japan, if it ever came to be an enemy of ours—it was one of the few ~~possible~~ enemies—was peculiarly vulnerable to incendiary attack. Studies then of maximizing and optimizing and engineering the burning to death of a maximum number of people began that year in the Air Staff.

1924 you'll notice is nine years before Hitler came to power, so this theory and the preparation for it was not a response to Hitlerian practice or ethos. The B-29, in fact, was conceived in 1939, ~~or~~ it was on the drawing boards two years before we got into the war. It was considered for Germany, but it was always, in the words of Martin Caidin, who wrote a very detailed book about the burning of Tokyo called A ~~Torch to the~~ Enemy, says from the very beginning it was understood in '29 the B-29 was that weapon designed to do what the Army Air Force had wanted to do since '24 and earlier. It was a destroyer of cities.

Where the U.S. public had come between 1939 and ~~1940~~ and 1945 I think is shown nicely by ~~(we're closing with this)~~ two pages from Time magazine. One is called "War Against Civilians," June 10th 1940. We're into the war in the West now; the attack on France was May 10th, 1940. As I've said, the first British attack on Germany but not on cities, on industrial targets, was May 11th (or there was a bigger one on May 15th generally regarded as the first British starting of this bombing.) A month later Time says this. It shows a picture of a French civilian victim in care of a nun: "Got hers from the German Air Force on a machine-gunned road." (This is "War against Civilians.") "The wounded dragged themselves away from this French hospital after the Germans smashed out its usefulness. Hurried through the ruins of a Belgian town is a critically wounded noncombatant." Here's a picture: "An old man and a young Belgian soldier make themselves small in a roadside ditch as the Germans go over." And in the lower right hand corner, "This little Belgian girl is just as dead as the soldier whose hobnailed boot appears upper left." And the text is this: "'War is the continuation of politics by other means,' said the great Prussian strategist Clausewitz. It took a great German politician, Adolf Hitler, to grasp the meaning of Clausewitz's doctrine. The killing of civilian refugees in order to clog the enemy's roads is a military conception."

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We did a lot of that in Japan, by the way, strafing on the roads because we had run out of targets. Nothing left to hit. So we aimed at railroad trains and columns of refugees.

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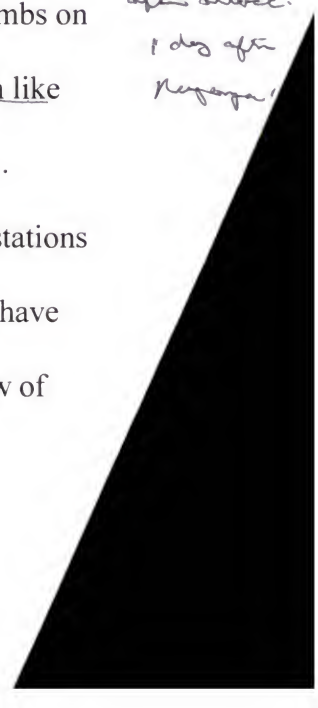
"The indiscriminate and enormously expensive bombing of isolated civilian communities and utterly nonmilitary objectives such as the Germans last week visited upon Belgium and France (see cuts) is a ghastly but logical extension of Jew beating, priest jailing, Hitler's terror politics." The final solution, the extinction of the Jews by engineered methods, had not begun then. That started a ~~little bit~~ year later in the war.

"His blasting of remote refuges and scattering of suicidal parachutists is for the psychological purpose of spreading the impression that nobody is safe anywhere. By it he hopes to cause demoralization, spread defeatism." It defined Hitlerism in 1940 as I've described it. Defining it for me when I ~~was 10. I~~ was 9, ~~perhaps when I first~~ saw it.

I looked up Time to see how they had reviewed LeMay's attack on Tokyo. The most destructive attack in the history of warfare. It has a picture of LeMay, who always smoked a ~~pipe~~ cigar like MacArthur. I ~~dealt with him in the Pentagon~~ once. ~~He smoked a pipe~~. "LeMay of the B-29s. For Tokyo the torch." The lead is this. This is March 19th, 1945: "Battle of the Pacific." Subtitle: "Fire Birds' Flight. A dream came true last week for U.S. Army aviators. They got their chance to loose avalanches of fire bombs on Tokyo and Nagoya and they proved that properly kindled, Japanese cities will burn like autumn leaves. The area totally destroyed covers a total of 422,000... 420 million... 500,000 square feet... 9,700 acres... half a dozen key installations such as railroad stations and oil plants were destroyed... The marines who had given their lives to win Iwo have not died in vain... Only two B-29s were lost... Only 48 hours later the second blow of the same size was swung against Nagoya... All but one returned... "



There is no estimate in here of possible Japanese casualties. But had there been, it's not clear what the public reaction might have been, because the next story is about the extermination of Japanese on the islands using fire, napalm and flame throwers. And the title of that is "Rodent Exterminators." At the end of the story, it was time for formal announcement that the Pacific's nastiest exterminating job was done.

Well, in the last two minutes here. Hold up for two minutes and I'll mention it.

I hadn't noticed in that story that the word turns up in the title of E. P. Thompson's book, Exterminism. "Dependency in this world of social structures to prepare themselves for extermination." Obviously it made it easier for the public to accept this process that it was against a dehumanized lower race—the Japanese at that point, who were totally conceptualized at that point as vermin, rodents, exterminators. But the same month we were killing 25,000 Germans in a night. And had the bomb been ready for Germany, we would have killed Germans. We would have used it in Germany. And Germans are the largest ethnic group in this country next to the English. And we're never dehumanized in the same way. You didn't have to be Japanese to be subject to this. You don't have to be Nazis to be targeted for it now.

And the irony with which I started this lecture is that it turned out that what was possible to do in the small—to change the weather by changing the winds—with the right American technology can be done in the large. And that by carrying out LeMay's plans for nuclear weapons (which you'll find next week but with no surprise at this point), we could do the same job with nuclear weapons that he had learned how to do with

incendiaries. That by doing what he had always dreamed of doing—hitting all the cities at once and destroying them totally—it changes the weather of the Northern Hemisphere and carries the radioactivity to the Southern Hemisphere and exterminates everybody. That's the problem we are facing and that's why I say this process has both to be understood and to be resisted. We must use the information you are learning here to change this—to change this in the world.

TRANSCRIPT NOTES

PDF end note:

> Dan:
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> I have done <u>very</u> little editing—only removed the word corrections which I was originally preserving. In a few places fairly shortly after I indicated that I was beginning to edit I used the overstrike capability of the Wang to indicate how I <u>would</u> have edited. This usually necessitated the addition of a "innocent" word. I did not continue to do this in the remainder of the tape (where I only removed word corrections). Almost all of the time no editing is required. Punctuation is the most difficult task. I am not sure I always preserve the emphasis of the spoken dialog as you might wish. It would probably be productive to have your comments.
>
> Helen Wildman
> Supervisor, Word Processing Center

Now my current note: I'm retranscribing this from a PDF of Helen's original (no audio file) with handwritten markings and notes that I'm mostly ignoring. I'm doing it in two versions, the first following Helen's as closely as possible without trying to make

changes or type in many of the handwritten marks and notes. THIS FILE is the second version, the edited one, where I went back through as if I was listening to her transcript being read, interpreting/editing that in my own way, still largely ignoring handwritten markings. It all goes to Daniel now for his review, to decide the definitive text. Things I question/can't verify on checking I highlit in yellow. K 5/5/16